For CONTENTS, see page iii and iv of Cover.

pp. 447-510.] [May 30, 1914.

TROPICAL DISEASES BULLETIN

IMPERIAL INSTITUTE 4 JUN. 1914 LIBRARY

Vol. 3. 1914. No. 9.

EXCHANGE COPY

ISSUED UNDER
THE DIRECTION OF THE
HONORARY MANAGING COMMITTEE
OF THE
TROPICAL DISEASES
BUREAU.

General Editor:
THE DIRECTOR OF THE BUREAU.

COMMONWEALTH MYCOLOGICAL INSTITUTE 26 MAY 1971

London:
TROPICAL DISEASES BUREAU,
Imperial Institute, S.W.

Sold by BAILLIÈRE, TINDALL & COX,
8, Henrietta Street, Covent Garden, W.C.

Price 1/6 net.] [All Rights Reserved.

HONORARY MANAGING COMMITTEE.

Chairman:

The Right Honourable Sir J. West Ridgeway, G.C.B., G.C.M.G., K.C.S.I., LL.D.

(who is also Chairman of the Advisory Committee of the Tropical Diseases Research Fund).

Sir John Rose Bradford, K.C.M.G., F.R.S.

(representing the Royal Society).

Surgeon-General Sir David Bruce, C.B., F.R.S.

Surgeon-General Sir R. Havelock Charles, I.M.S., G.C.V.O.

Colonel Sir William B. Leishman, R.A.M.C., F.R.S., K.H.P.

Sir John M'Fadyean, M.R.C.V.S.

Sir Patrick Manson, G.C.M.G., F.R.S.

Sir Ronald Ross, K.C.B., F.R.S.

Sir S. Stockman, M.R.C.V.S.

Mr. J. A. C. Tilley

(representing the Foreign Office and Sudan Government).

Mr. H. J. Read, C.M.G.

(representing the Colonial Office),

with

Mr. A. Berriedale Keith, M.A., D.C.L.

of the Colonial Office, as Secretary.

STAFF OF THE BUREAU.

Director:

A. G. Bagshawe, M.B., B.C., D.P.H. Cantab.,

of the Uganda Medical Staff.

Assistant Director:

G. C. Low, M.A., M.D., *Lecturer, London School of Tropical Medicine.*

Librarian:

R. L. Sheppard.

Sectional Editors:

Andrew Balfour, C.M.G., M.D., D.P.H. Cantab.

Fleet-Surgeon P. W. Bassett-Smith, R.N., C.B., M.R.C.P.

Major S. Lyle Cummins, R.A.M.C., M.B., B.Ch.

Captain S. R. Douglas, I.M.S. (retd.).

H. B. Fantham, B.A., D.Sc.

Edward Hindle, Ph.D.

Colonel W. G. King, C.I.E., I.M.S. (retd.).

R. T. Leiper, D.Sc., M.B., Ch.B.

J. B. Nias, M.D., M.R.C.P.

F. M. Sandwith, M.D., F.R.C.P.

J. Henderson Smith, M.B., Ch.B.

C. M. Wenyon, M.B., B.S., B.Sc.

Warrington Yorke, M.D.

Editor of the Tropical Veterinary Bulletin:

A. Leslie Sheather, B.Sc., M.R.C.V.S.

Now Ready. Price 7/6 net

Postage in Great Britain, 4d. Abroad, 6d.

Pp. xvi. × 232, *with* 17 *Plates* 3 *Coloured.*

The Care AND Treatment of European Children IN THE Tropics.

BY G. MONTAGU HARSTON
M.D.Lond., M.R.C.S.Eng., L.R.C.P.Lond.,
Fellow of the Society of Tropical Medicine and Hygiene; Fellow of the Royal Society of Medicine; Examiner in Medicine, Hong Kong University.

With introduction by
Sir PATRICK MANSON, G.C.M.G., M.D.

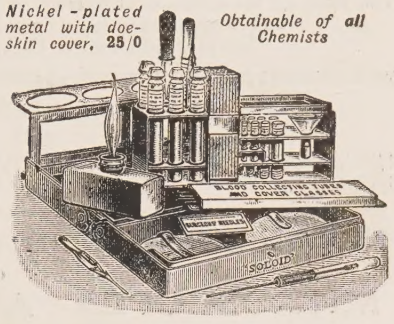
LONDON.
BAILLIÈRE, TINDALL & COX,
8, Henrietta Street, Covent Garden.

TRADE MARK 'SOLOID' BRAND
BACTERIOLOGICAL CASE NO. 505 REGISTERED

Facilitates collection, staining and mounting of blood, pus, sputum, etc., for examination.

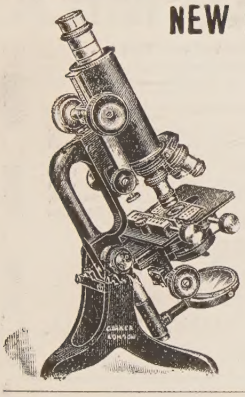
Nickel-plated metal with doe-skin cover, 25/0

Obtainable of all Chemists



The advantages of this outfit will be demonstrated, on request, at the Firm's London Exhibition Room:
54, Wigmore Street, W.

BURROUGHS WELLCOME & CO., LONDON
xx 943 COPYRIGHT



NEW MODEL "D.P.H." No. 1a MICROSCOPE.

With built-on mechanical stage, giving movements of 60 m/m in the horizontal and 25 m/m in the vertical position, Abbe condenser and iris, eyepieces: 2 and 4, objectives: ⅔in., ⅙in., and 1/12in. oil immersion, triple nosepiece, in mahogany case £22 5 0

NEW FORMULA 1/12in. OIL IMMERSION, N.A. 1.30 .. .. .. £5 0 0

NELSON'S DARK GROUND ILLUMINATOR £1 10 0

C. BAKER, 244, High Holborn, London.

Established 1765

Agents for Zeiss, Winkel, Leitz, Reichert, etc. Jung's Microtomes, Grubler's Stains and Reagents.

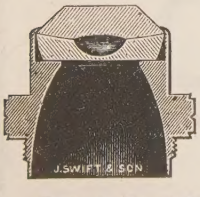
SECTIONAL PAMPHLETS OR FULL CATALOGUE POST FREE.

JAMES SWIFT & SON,

OPTICAL AND SCIENTIFIC INSTRUMENT MAKERS.

Contractors to all Scientific Departments of H.M. Government.

Grands Prix, Diplomas of Honour, and Gold Medals at London, Paris, Brussels, &c.



NEW DARK GROUND CONDENSER

For Examining Living Bacteria, &c., under High Magnifications.

This Condenser is unequalled for giving brilliant illumination with a comparatively weak source of light.

Price £1 10 0. *Catalogue post free.*

UNIVERSITY OPTICAL WORKS, 81, Tottenham Court Road, London, W.

(C35) a

ZEISS
NEW 1/7-INCH

An Oil Immersion Objective giving excellent results with the **highest power** Huyghenian or Compensating Oculars at the remarkably low price of **£3.**

The Zeiss 1/7 has a Numerical Aperture of 0·9, and Free Working Distance of 0·35 mm., and is equally suitable for direct observation or photomicrography.
It is supplied for either English or Continental tube lengths.

THIS OBJECTIVE has BEEN TESTED and APPROVED by MANY LEADING MICROSCOPISTS.

LEAFLET "14N" POST FREE.

1/12 inch OIL IMMERSION OBJECTIVE	..	N.A. 1·25	.. £5
1/12 „ „ „ „	(Fluorite)	„ 1·30	.. £7

NEW ILLUSTRATED CATALOGUE "14 M"
OF
MICROSCOPES AND ACCESSORIES

Post free on application.

CARL ZEISS (London), Ltd.,
13-14, GREAT CASTLE STREET, OXFORD CIRCUS, LONDON, W.

HORLICK'S MALTED MILK

MALTED BARLEY, WHEAT, and MILK in Powder Form.

THE IDEAL FOOD FOR HOT CLIMATES.

HORLICK'S MALTED MILK has given a new conception of what can be accomplished with a milk diet. It presents all the unrivalled food value of pure full-cream milk so enriched and modified with the soluble nutritive extracts of choice malted cereals, that it is quickly and easily assimilated. Its perfect digestibility renders it invaluable in all Intestinal troubles, and the ratio of protein to carbohydrate commends it as reliable reconstructive. By its use the necessity of a fresh milk supply is obviated, and as the ingredients are thoroughly pasteurised during manufacture, all possibility of germ contamination is precluded. Ready solubility and ease of preparation are also important factors.

NO ADDED MILK OR COOKING REQUIRED.

Offered in Sterilized Glass Containers especially adapted for use in the Tropics.

Samples to the Profession free by post on application to

HORLICK'S MALTED MILK CO., Slough, Bucks., England.

THE FIRM OF **C. REICHERT** (VIENNA)

Have Made and Sold in Competition

55000

MICROSCOPES. Abridged English Catalogue Just Published.

DEPOT AGENTS:

H. F. ANGUS & Co., 83 WIGMORE ST., LONDON.

TROPICAL DISEASES BUREAU.

TROPICAL DISEASES BULLETIN.

Vol. 3.] 1914. [No. 9.

AMOEBIASIS AND DYSENTERY.

Amoebiasis.

Ujihara (K.). **Studien über die Amöbendysenterie.** (1. Mitteilung). —*Zeitschr. f. Hyg. u. Infektionskr.* 1914. Apr. 1. Vol. 77. No. 2. pp. 329-355. With 1 plate.

A collection of short studies on amoebic dysentery as it is met with in Formosa ; the author's principal conclusions are as follows :—

1. The type of amoeba met with in Formosa is *A. tetragena* Viereck. It occurs in the active or vegetative stage, in two forms which may be called the histolytica- and the tetragena-form ; but the cysts are always of the recognised tetragena type. Three degenerative forms can also be distinguished, differing by their mitosis. The occurrence of such degeneration forms in the stools of the patient is, clinically, of good augury.

2. The cysts, outside the body, will preserve their vitality for a month, if protected from sunlight ; and can stand warming to a temperature of 50° C. for 30 minutes for four successive days without being killed. They are strongly resistant to acids, but not to alkalies. Quinine, bile and other lipoid-dissolving substances have a dissolving action on the capsule ; so has trypsin, but not gastric juice.

3. The specific gravity of such cysts, as determined with mixtures of glycerin and water of varying density, seems to be 1065.

4. Combinations of quinine with tannin are the best remedial agents in the vegetative stage of the amoeba, the tannin delaying the absorption of the quinine until its arrival at the lower part of the alimentary canal. For the expulsion of cysts on the other hand thymol and oil of male fern are the best remedies.

S. R. Douglas.

James (W. M.). **Report of a Case of Infection with** *Entamoeba tetragena.*—*Proc. Canal. Zone Med. Assoc. for the Half-Year April to Sept. 1912.* Vol. 5. Pt. 1. pp. 46-52.

A report of a case of dysentery observed in 1912 in which *Entamoeba tetragena* was found. Most of the paper is taken up with a discussion of the differences between the various entamoebae. [The more recent

(C35) Wt.P.10/46.—10.3.14. 2000. 5.14. B.&F.Ltd. Gp.11/4. A

publications of the author as well as of investigators in other parts of the world have brought the problem discussed so much nearer solution that it does not appear necessary to abstract the paper more fully.]

S. R. D.

MATHIS (C.). **Les Porteurs de Kystes de *Löschia histolytica* et la Prophylaxie de la Dysenterie Amibienne.**—*Bull. Soc. Méd. Chirurg. de l'Indochine.* 1913. Dec. Vol. 4. No. 10. pp. 474-481.

This important paper deals with the rôle of parasite-carriers in amoebic dysentery. The author states that *Löschia* (*Entamoeba*) *histolytica* is the sole cause of amoebic dysentery, the other species from the human intestine being doubtful, insufficiently characterised, or belonging to the free amoebae. While further research is needed on the duration of vitality of the four-nucleate cysts of *L. histolytica*, it seems likely that even encysted forms do not retain their vitality for long outside the human host. Two classes of carriers of dysenteric amoebae are recognised :—(1) Convalescent patients who still discharge cysts ; (2) healthy carriers of *L. histolytica*. The latter are the more dangerous, as they produce large numbers of the infective cysts in their faeces, without any clinical manifestations being present. At Tonkin, Mathis found that 8 per cent. of the natives examined by him—a limited number he says—were thus functioning as healthy carriers of dysentery.

The natural method of infection is by the mouth, either by contact of the hands with the germ carriers or by the ingestion of drinking water or vegetables recently contaminated by human dejecta. Mathis believes that direct, inter-human contagion is as important as the indirect infection by food or drink. He points to evidence in favour of his opinion, afforded by the absence of dysentery among the troops when in barracks, and its sudden appearance under the more crowded conditions of camp life, and also the frequency of fatal dysenteric attacks among doctors and nurses incurred during the exercise of their duties.

Great care must be exercised with regard to food and drinking water. The disinfection of the dejecta of all sufferers from intestinal complaints is necessary. Direct contamination must be avoided. The hands should be washed frequently and especially before meals. Antiseptics should be added to the dejecta of all suspects. A systematic search for the carriers of dysenteric amoebae is useful, but is not indispensable, but an amoebic index enables one to judge of the degree of danger.

H. B. Fantham.

LANDOUZY (L.) & DEBRÉ (Robert). **Les "Porteurs de Germes" Importateurs de Maladies exotique particulièrement de la Dysenterie Amibienne.**—*Bull. Acad. Méd. Paris.* 1914. Séance du 24 mars. 3 ser. Vol. 71 (78 année). No. 12. pp. 439-459. With 3 figs. [With discussion]. Also published without discussion in *Presse Méd.* 1914. Mar. 25. No. 24. pp. 229-232.

This paper deals with amoebic dysentery occurring in individuals who have never left France.

The authors give the detailed account of a case of this sort who developed a liver abscess, which resulted in his death; very full notes of the post mortem examination are given, including the histological changes found in various lesions.

From the examination of the literature the authors collected accounts of 13 other cases with a similar history, and point out the danger that sufferers from chronic dysentery contracted in the tropics may be to the inhabitants of Europe.

They show clinicians practising in France that, as such cases do occur, the fact that the patient gives a history of never having left France does not exclude the possibility of his disease being amoebic dysentery.

S. R. D.

VEDDER (Edward B.). **Origin and Present Status of the Emetin Treatment of Amebic Dysentery.**—*Jl. Amer. Med. Assoc.* 1914. Feb. 14. Vol. 62. No. 7. pp. 501-506.

In this paper, which is an excellent and most impartial description of the subject, the author gives a very complete account of the earlier use of emetine for the treatment of dysentery. He then deals with his own experiments showing the amoebicidal action of emetine and ipecacuanha, which were confirmed by WHERRY.

Referring to ROGERS'S work, while giving him full credit for the method of administration of emetine subcutaneously and pointing out the extreme usefulness of this discovery, he draws attention to the fact that the often quoted experiments of ROGERS on the action of the drug on *E. histolytica* in stools are quite without significance, as these amoebae soon lose their motility and degenerate even under the most favourable circumstances. He then passes on to review the various reports of the favourable results obtained by this treatment, sounding a note of warning against the use of very large doses, especially by intravenous injection, and sums his paper up in the following conclusions :—

"1. Emetine is a true specific in amebic dysentery and hepatitis.

"2. The hypodermic use of the hydrochlorid salt is the preferred method of treatment.

"3. A large percentage of the cases so treated continue to harbour *E. histolytica* in the faeces for some time.

"4. While in view of this fact it is impossible to state at present that patients treated by emetine will remain permanently cured, yet the prospects of obtaining permanent cures by this method are encouraging.

"5. The presence of a considerable number of these chronic ameba carriers constitutes a sanitary menace to the community.

"6. It is possible that the amebas may be removed from these carriers by a course of irrigations of quinine or silver nitrate.

"7. Experiments have failed to show that emetine possesses any marked therapeutic virtue in bacillary dysentery, syphilis, rabies or trypanosomiasis."

S. R. D.

i. BETTS (A. J. V.). **Emetine and Dysentery.** [Correspondence.]—*Indian Med. Gaz.* 1914. Mar. Vol. 49. No. 3. p. 124.

ii CARTER (R. Markham). **Emetine and Ipecacuanha; their Amoebacidal Value in Pathogenic Amoebiasis.**—*Ibid.* pp. 109-112.

iii. Chaterji (K. K.). **Emetine in Hepatitis and Amoebic Abscesses of the Liver and Spleen.**—*Ibid.* pp. 108-109.

iv. Hooton (A.). **The Emetine Treatment of Dysentery and Allied Liver Conditions in Kathiawar.**—*Ibid.* pp. 116-117.

v. Hudson (C. T.). **Notes on the Employment of Emetine in the Dharwar District.**—*Ibid.* pp. 117-118.

vi. Maddock (E. C. G.). **A Note on Three Cases treated with Emetine.**—*Ibid.* p. 118. With a chart.

vii. Munro (D.). **Emetine in Amoebic Dysentery.**—*Ibid.* pp. 103-106.

viii. Newman (E. A. R.). **The Operative Treatment of Hepatic Abscess.**—*Ibid.* pp. 97-101.

ix. Nott (A. H.). **Emetine and Liver Abscess.**—*Ibid.* pp. 101-103.

x. Sandes (John D.). **Treatment of Liver Abscess.**—*Ibid.* pp. 107-108.

xi. Seal (C. Baldwin). **Note on Amoebic Dysentery in the Darjeeling District and its Treatment.**—*Ibid.* pp. 106-107.

xii. Thurston (E. Owen). **A series of 101 Cases of Abscess of the Liver.**—*Ibid.* pp. 88-96.

xiii. Rogers (Leonard). **The Emetine and other Treatment of Amoebic Dysentery and Hepatitis including Liver Abscess.**—*Ibid.* pp. 85-88.

xiv. Whitmore (A.). **An Experience in the Use of Emetine in the Treatment of Amoebic Dysentery.**—*Ibid.* pp. 112-116.

The above papers appeared in a number of the *Indian Medical Gazette* entirely devoted to the question of the treatment of amoebiasis by emetine.

Reviewing the papers collectively two points are especially noticeable :—

1. With a single exception, all the authors are very favourably impressed with the treatment of both dysentery and hepatitis by subcutaneous injections of emetine.

2. With regard to liver abscess, the majority of the authors, and these include those with the largest experience, are strongly of the opinion that repeated aspiration, combined with subcutaneous injections of emetine, is the best and safest treatment.

The following are short abstracts of the individual papers :—

i. A letter in which the author states that, having treated a series of ten cases of dysentery with emetine with no improvement but with immediate improvement after the administration of ipecacuanha in 30 grain doses, he is strongly of the opinion that the ipecacuanha treatment is superior to the emetine.

ii. A somewhat confused paper in which the author, judging from the treatment of 168 cases of amoebiasis, gives a verdict strongly in the favour of the emetine treatment, especially in cases of dysentery and hepatitis. In cases of liver abscess, however, he is of the opinion that incision and drainage is all that is necessary and should always be adopted. A large part of the paper consists of theoretical considerations, given in extremely polysyllabic verbiage, as to the method of penetration of the amoebae into the body and the channels by which they reach the various organs.

iii. The author has used the emetine treatment only in the more severe type of cases such as:—(1). Dysentery with pericolitis; (2). Presuppurative hepatitis; (3). Liver and splenic abscess.

The impression gained from the treatment of such cases has been very favourable. With regard to operative treatment employed for the evacuation of pus from amoebic abscess, the author strongly advocates aspiration whether the abscess is situated in the liver or spleen; two cases of the latter type are reported.

iv. Notes of the treatment of four cases, all of which recovered.

v. An account of six cases treated successfully with emetine; the author's usual practice is to employ emetine in those cases which fail to respond to ipecacuanha.

vi. Notes on three cases treated with emetine with favourable results.

vii. The author attempts to deal statistically with a small number of cases treated by emetine injections with the usual disappointing results. The impression, however, that he gained from the observation of these cases was very favourable to emetine treatment, especially in cases of hepatitis.

viii. The author, from the observation of 25 cases of liver abscess, concludes that exploration by aspiration is a dangerous and unreliable method and recommends exploration by incision in such cases; apparently, however, having read papers by THURSTON and ROGERS on the treatment of liver abscess by aspiration combined with subcutaneous injections of emetine, he is inclined to modify his views. His opinion of the emetine treatment of the presuppurative stages of hepatitis is very favourable. A detailed account of the operative measure undertaken to locate and evacuate such abscesses is given.

ix. Notes on two cases of liver abscess. In the author's opinion the best treatment for such cases is aspiration of the pus combined with emetine subcutaneously. In very few cases, and only those where the abscess is small and the skin involved, is open incision preferable.

x. The author bases his conclusions on the study of 32 cases of liver abscess, many of which were in a very bad condition. The treatment recommended is aspiration with presumably subcutaneous injections of emetine. In very severe cases no general anaesthetic should be employed.

xi. From the study of 70 cases the author concludes that emetine is a specific for amoebic dysentery. Concerning dosage he recommends that at least two-thirds of a grain should be given daily.

xii. An instructive paper on liver abscess compiled from the author's own notes. Amongst the points elucidated are:—

(1). *Sex incidence.* 97 of the cases occurred in males, only 3 in females.

(2). *Average age* of the cases was 34·5 years.

(3). *Caste.* Hindus 85, Mohamedans 10, Europeans and Anglo-Indians 6.

(4). *History of dysentery.* This was enquired into in 79 cases, 44 of which gave a positive history, 35 a negative one.

(5). *Alcoholism.* A history of this condition was sought for in 75 cases, of which 42 gave a history of varying degrees of excess and 33 denied excessive indulgence.

(6). *Geographical distribution.* The disease in the author's experience was commonest in lower Bengal.

With regard to treatment the author very strongly advocates the practice of aspiration of the pus, combined with the subcutaneous injection of emetine, 1 grain of which is administered immediately before the aspiration. A table is added giving the most important features of each case.

xiii. The author records the results of some experiments on the comparative toxicity of cephaelin and emetine hydrochlorides on paramoecia, which showed that emetine is the more active substance. Cultures of paramoecia were used, as the author was unable to obtain cultures of amoebae.

The next section of the paper deals with the clinical results obtained by treating cases of dysentery with a mixture of the alkaloids obtained from ipecacuanha; the author's opinion is that the mixed alkaloids gave less striking results than when emetine alone was used. Experiments are also recorded carried out to determine the lethal dose of emetine hydrochloride, rabbits and monkeys being the animals used. Assuming that man would be proportionately affected, the lethal dose for a man of 70 kilogrammes would be 15 grains, if the drug were given hypodermically, and 5 grains if given intravenously. The paper is concluded with some remarks on the treatment of hepatitis and liver abscess; for the latter condition aspiration is strongly recommended.

xiv. The author records the result of emetine treatment in 34 cases. Although four of these died he satisfactorily shows that the cause of death was other than dysentery, and in those cases where post-mortem examinations were obtained the dysenteric lesions were found to be in a healing state. Relapses after apparent cure were by no means uncommon. The author draws attention to the danger of failing to recognise cases of mixed bacillary and amoebic infections, and illustrates this point with the notes of three cases. S. R. D.

ALLAIN (J.). **Emploi du Chlorhydrate d'Emétine dans les Amibiases par les Médecins du Corps de Santé des Troupes Coloniales.**—*Bull. Soc. Path. Exot.* 1913. Dec. Vol. 6. No. 10. pp. 723-730.

ALLAN (William). **Progress Report on the Use of Emetine in Amebic Dysentery.**—*Amer. Jl. Trop. Dis. & Prevent. Med.* 1914. Feb. Vol. 1. No. 8. pp. 565-572.

ALOY (Alberto Correa). **Del Chlorhidrato de Emetina en el Tratamiento de la Disenteria por las Amibas.**—*Revista Med. de Yucatan.* 1913. Dec. Vol. 9. No. 2. pp. 25-27.

ANNALES D'HYGIÈNE ET DE MÉDECINE COLONIALES. 1914. Jan.-Feb.-Mar. Vol. 17. No. 1. pp. 236-240. **Hôpital de Hanoï. Le Chlorhydrate d'Emétine dans les Hépatites suppurées.** [Clinique d'Outre-Mer].

BELL (J.). **Note of a Case of Liver Abscess treated without Operation.** —*Jl. Trop. Med. & Hyg.* 1914. Feb. 2. Vol. 17. No. 3. p. 33.

BRAU. **L'Emétine à l'Hôpital de Saïgon (Cochinchine)** iv. [Clinique d'Outre-Mer]. *Ann. d'Hyg. et de Méd. Colon.* 1913. Oct.-Nov.-Dec. Vol. 16. No. 4. pp. 1133-1150.

Brelet (M.). **Traitement de la Dysenterie Amibienne, de l'Hémoptysie et des autres Hémorragies par l'Emétine.**—*Gaz. des Hôpit. Civils et Militaires.* 1913. Dec. 23. Vol. 86. No. 146. pp. 2318-2320.

Chauffard (M. A.). **Etat hémop oïque chronique, consécutif à l'Ouverture dans les Bronches d'un Abcès Dysentérique du Foie. Guérison par l'Emétine.**—*Bulls. et Méms. Soc. Méd. des Hôpit. de Paris.* 1914. Jan. 22. 3e Ser. 30e Ann. No. 2. pp. 29-34.

Chauffard. **Les Rechutes de la Dysenterie Amibienne et leur Traitement.**—*Jl. des Praticiens.* 1914. Jan. 17. Vol. 28. No. 3. pp. 39-40.

Dopter (Ch.). **Amibiase et Emétine.**—*Bull. Soc. Path. Exot.* 1914. Feb. Vol. 7. No. 2. pp. 142-152.

Eustis (Allan). **Report of a Case of Long-standing Amebic Abscess of Liver and Lung. Cured by the Intramuscular Injection of Emetine Hydrochloride.**—*Amer. Jl. Trop. Dis. & Prevent. Med.* 1914. Jan. Vol. 1. No. 7. pp. 520-523.

Gaide (J.) & Mouzels (P.). **Note sur le Traitement de l'Abcès du Foie d'Origine Amibienne par l'Emétine.** [Clinique d'Outre-Mer.]—*Ann. d'Hyg. et de Méd. Colon.* 1913. Oct.-Nov.-Dec. Vol. 16. No. 4. pp. 1150-1155.

Gaide (L.) & Mouzels (P.). **Note sur le Traitement des Abcès du Foie par l'Emétine.**—*Bull. Soc. Path. Exot.* 1913. Dec. Vol. 6. No. 10. pp. 716-723.

Greer (Alvis E.). **Amoebic Dysentery treated with Emetine.**—*Texas State Jl. of Med.* 1913. Dec. Vol. 9. No. 8. p. 254

Guillemet. **Dysenterie Amibienne traitée sans succès par l'Emétine.** [Clinique d'Outre-Mer.]—*Ann. d'Hyg. et de Méd. Colon.* 1913. Oct.-Nov-Dec. Vol. 16. No. 4. pp. 1115-1118.

Hartsock (Frederick M.). **Emetine in Dysentery.**—*Military Surgeon.* 1913. Dec. Vol. 33. No. 6. pp. 517-521.

de Jonge (G. W. Kiewiet). **Aanteekeningen over 25 met Emetine behandelde Gevallen van Amoben-dysenterie.** [Remarks on 25 Cases of Amoebic Dysentery treated with Emetine.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1913. Vol. 53. No. 6. pp. 842-868.

Kelly (W. D. G.). **Notes of Some Interesting Cases.**—*Jl. R. Army Med. Corps.* 1913. Dec. Vol. 21. No. 6. pp. 688-692.

Martel. **L'Emétine à l'Hôpital de Saïgon (Cochinchine).** i. [Clinique d'Outre-Mer.]—*Ann. d'Hyg. et de Méd. Colon.* 1913. Oct.-Nov.-Dec. Vol. 16. No. 4. pp. 1118-1122.

Maurras & Hervier. **L'Emetine à l'Hôpital de Saïgon (Cochinchine).** iii. [Clinique d'Outre-Mere.]—*Ibid.* pp. 1128-1133.

McCaskey (G.W.). **A Case of Amebic Dysentery of Thirteen Years' Duration Cured by Emetine Hydrochloride.**—*Jl. Amer. Med. Assoc.* 1914. Feb. 14. Vol. 62. No. 7. pp. 534-555.

Medical Missions in India. 1913. Oct. Vol. 19. No. 75. pp. 169-170. **Note on the Value of Emetine in the Treatment of Amoebic Dysentery.** [E.F.N.].

Nogué. **L'Emétine à l'Hôpital de Saïgon (Cochinchine). ii. Cas où Les Injections de Chlorhydrate d'Emétine ont eu une Action Curative Evidente.** [Clinique d'Outre-Mer.]—*Ann. d'Hyg. et de Méd. Colon.* 1913. Oct.-Nov.-Dec. Vol. 16. No. 4. pp. 1122-1127.

Pepin (Jules). **Deux Cas de Dysenterie Amibienne traités et guéris par l'Emétine.**—*Bull. Soc. Méd. de l'Ile Maurice.* 1913. Oct.-Nov.-Dec. Vol. 31. 2 Ser. No. 34. pp. 63-64.

Phillips (L.). **Le Traitement spécifique de la Dysenterie Bacillaire avec une Notice sur l'Emploi du Chlorhydrate d'Emétine dans la Dysenterie Amibienne.**—*Rev. Méd. d'Egypte.* 1913. Oct. No. 10. [6 pp.]

Rosier (Ch.). **Un Cas d'Abcès du Foie post-dysentérique. Opération et Traitement au Chlorhydrate d'Emétine.**—*Presse Méd. Belge.* 1914. Feb. 1. Vol. 66. No. 5. pp. 75-78.

Seguin. **Quelques Observations de Dysenterie traitée par l'Emetine.** [Clinique d'Outre-Mer.]—*Ann. d'Hyg. et de Méd. Colon.* 1913. Oct.-Nov.-Dec. Vol. 16. No. 4. pp. 1155-1161.

Wagner (Jerome). **Report of Cases of Amebic Dysentery treated with Emetine.**—*Med. Record.* 1914. Jan. 31. Vol. 85. No. 5. pp. 190-194.

Webb (Vere C.). **Amoebic Dysentery?**—*Lancet.* 1914. Jan. 3. pp. 74-75.

Werner (H.). **Emetin bei Amöbendysenterie.**—*Arch. f. Schiffs- u. Trop.-Hyg.* 1914. Mar. Vol. 18. No. 6. pp. 206-210.

Yeomans (Frank C.). **Amebic Dysentery. With Special Reference to its Treatment with Emetine.**—*New York Med. Jl.* 1914. Feb. 14. Vol. 99. No. 7. pp. 327-331.

All the above papers deal with the treatment of amoebiasis with subcutaneous injections of emetine and the conclusions come to by all these authors is that the treatment is extraordinarily beneficial.

Several draw attention to the occurrence of relapses after this treatment, and some give a more or less complete summary of the literature of the subject.* S. R. D.

James (W. M.). **The Effects of Certain Drugs on Pathogenic Entamoebae of the Human Intestines. With Special Reference to the action of Bismuth subnitrate in large doses and to the Hypodermic Injection of the Hydrochloride of Emetine.**—*Amer. Jl. Trop. Dis. & Prevent. Med.* 1913. Dec. Vol. 1. No. 6. pp. 431-446. With 1 plate.

The first part of this paper is concerned with a discussion of the various treatments for amoebic dysentery and especially the administration of large doses of bismuth subnitrate and the subcutaneous injection of emetine salts, and the author puts forward several hypotheses as to how these drugs may attack the amoebae causing the disease.

*In future, unless they contain matter of exceptional interest, papers on the treatment of amoebiasis with emetine will be cited in the Lists of References only, and will not receive notice in the text.—Ed.

The second part deals with the morphological changes observed in amoebae obtained from the stools of patients undergoing treatment with these drugs. The author points out that in untreated cases the amoebae, when wet fixed and stained with haemotoxylin, show a cytoplasm which stains faintly and contains many delicate granules arranged in a network. The nucleus, if of the " tetragena " type, is oval or circular, and contains a round or irregularly shaped body staining darkly, the karyosome, which surrounds a smaller, densely staining body, the centriole ; if of the " histolytica " type the karyosome is relatively small and stains less densely. If the amoebae are kept for one to two hours in a moist chamber before being fixed and stained, certain degeneration forms appear characterised by disappearance of the nuclear network, and collection of the chromatin into large blocks against the nuclear membrane with loss of staining of the karyosome. Later, such phenomena as extrusion of the nucleus, and the appearance of the so-called chromidia in the cytoplasm, are sometimes seen.

In patients treated with bismuth subnitrate such changes as those described above are observed in amoebae fixed and stained immediately after their passage from the body.

In patients treated with emetine a different series of changes is observed. The nucleus at first is swollen. The chromatin is broken up into fine granules. The karyosome is increased in size and more distinct. Later the chromatin, karyosome and lining all appear as granules, the cytoplasm stains feebly and fibrils are observed in it.

The plate gives drawings of the amoebae, bringing out the various points mentioned.

S. R. D.

Brooke (Roger). **The General Action of Quinine in the Treatment of Amebic Dysentery.**—*Jl. Amer. Med. Assoc.* 1914. Mar. 28. Vol. 62. No. 13. pp. 1009–1010.

The author, after discussing the various treatments for dysentery commonly used, including treatment both with ipecacuanha and emetine, states that he treated 10 chronic cases of amoebic dysentery with quinine with seemingly good results. The doses of quinine given were 1·5 to 2 grams daily by the mouth for about six days.

S. R. D.

Winn (Claud M.). **The Therapeutic Effect of Salvarsan in the Treatment of Amoebic Dysentery and Amoebiasis. Report of Twelve Cases: A Preliminary Note.**—*Proc. Canal Zone Med. Assoc. for the Half-Year April to Sept. 1912.* Vol. 5. Pt. 1. pp. 7–10.

The author reports 12 cases of dysentery treated with salvarsan with good result. That the improvement was due to the salvarsan, he deduces from the following observations :—

1. The number and character of the stools changed within 24 hours.
2. Arsenic was demonstrated in the stools within five hours.
3. The amoebae disappeared from the stools within 24 to 72 hours of the administration of the drug.

S. R. D.

WHEELER (George W.). **Amebic Dysentery. Report of a Case apparently cured with Neosalvarsan.**—*U.S. Public Health Rep.* 1914. Mar. 13. Vol. 29. No. 11. pp. 627-629.

The author reports a case of amoebic dysentery of seven months' duration, who when first seen was passing 14 stools per diem, consisting largely of blood and mucus and containing large numbers of amoebae.

Neosalvarsan, 0·9 gram, was given intravenously, followed by a similar dose in 48 hours; no untoward symptoms followed the treat ment; there was instead a rapid improvement, the stools becoming normal and the amoebae disappearing.

Some weeks afterwards the man was in perfect health.

S. R. D.

DARLING (S. T.). **Notes on the Life History and Viability of *E. tetragena*.**—*Proc. Canal Zone Med. Assoc. for Half-year April to Sept. 1912.* Vol. 5. Pt. 1. pp. 67–71.

The present paper covers much the same ground as the author's previous publications on the pathogenic Entamoebae of dysentery, which he reviews. In addition, he gives his experiences of a case of naturally acquired dysentery in a dog, which is of interest from its connection with preventive measures. The author states:—

"From a study of a case of dysentery naturally acquired in a dog, I was able to note some very early lesions. And in these the trophozoites were dotted along the surface of the mucosa, and had there produced the very early lesion of superficial erosion of the epithelial cells. In this infection, at any rate, they were not admitted to the submucosa at once, but were found at the very surface. In many places they had eroded the mucosa as far as the muscularis mucosae. . . ."

"I wish to call your attention to the case of naturally acquired dysentery of a dog mentioned above. The dog was sent to the Laboratory for observation and I found, in addition to coccidiosis and hookworm disease, that he had extensive entamoebic colitis. It is impossible to say whether he died as a result of the hookworm infection or the *entamoebae*, and although *entamoeba* cysts could never be detected, the trophozoites were closely similar to those seen in man. I feel that we should bear in mind the possi bility of dogs and cats acting as carriers of entamoebic dysentery, and be on our guard against them."

[It would be interesting to determine the effect of coccidiosis in dogs.]

H. B. F.

KUMAGAWA (M.). **An Investigation of Pathogenic Amoebae.** [In Japanese.]—[*Tokyo Medical Journal.* [Tokyo iji-shinshu.] 1913. Sept. No. 1835-1836-1837].

The author has made detailed investigations of the entamoebae which he got from the faeces of cases of amoebic dysentery in Japan and some parts of China. He ex mined more than five thousand fresh and stained specimens, and tried several methods of cultivation, and also animal experiments. He concludes:—

1. *Entamoeba tetragena* is found in the faeces of dysentery patients in Japan and China.
2. *Entamoeba tetragena* reproduces not only by simple division, but by schizogony and conjugation (the author showed microphotographic illustrations).

3. The differentiation between *Entamoeba histolytica* and *Entamoeba tetragena* is still doubtful.

4. *Entamoeba tetragena* and *Entamoeba coli* cannot be cultivated in artificial media as has been reported by several investigators.

5. It is appropriate to apply the name of "*Entamoeba dysenteriae*" to the Entamoeba which causes dysentery, as COUNCILMAN and LAFLEUR have proposed.

6 *Entamoeba coli* is found in 32·7 per cent. of 110 healthy persons in Tokyo.

M. Kumagawa.

FISCHER (Walther). **Ueber Amöbenzystitis.** [On Amoebic Cystitis.]—*München. Med. Wochenschr.* 1914. Mar. 3. Vol. 61. No. 9. pp. 473–474.

The report of a case of amoebic infection of the bladder. The patient, a thirty year old Chinaman, presented himself at the out-patient department of the hospital at Shanghai complaining of painful micturition. There was no history of dysentery. The urine was turbid, yellow and very acid and gave a thick white sediment, which under the microscope showed numerous amoebae not distinguishable from *E. tetragena*. Unfortunately the patient would not become an in-patient and did not return to the out-patient department. The amoebae were from 15 to 25μ in diameter; no cysts were seen.

S. R. D.

BEHREND (Kurt). **Kurze Angaben über eine nichtpathogene Amöbe aus dem Darm von** *Macacus rhesus*. [On a Non-pathogenic Amoeba from the Intestine of *Macacus rhesus*.]—*Arch. f. Protistenkunde.* 1914. Mar. 28. Vol. 34. No. 1. pp. 35-38. With 8 text figs.

The author gives a preliminary account of an amoeba found by him in a *Macacus rhesus* at the Institut fur Schiffs- und Tropenkrankheiten at Hamburg. The cysts of the amoeba only could be determined with certainty, while in a few forms it was doubtful if they were free or encysted. The cysts varied from 8 μ to 25 μ, they were circular or oval, with a cyst wall of variable thickness. The cytoplasm was alveolar or uniformly granular. Most cysts contained vacuoles. When the vacuoles were obvious, the nucleus was indistinct and *vice versa*. A karyosome was often present in the nucleus. Usually one nucleus occurred, two were fairly common, four were less frequent, while eight nuclei were seen twice. Chromidia or "chromatin" masses occurred at almost all nuclear stages, numbering from 2 to 20, and of variable sizes. In binucleate cysts these masses were often somewhat concentrated. In tetranucleate cysts the chromatin rods lay between the two pairs of nuclei. The eight-nucleate cysts showed no chromatin rods. Glycogen occurred in the cysts, sometimes concentrated, sometimes diffuse.

The action of acid pepsin solution for 24 hours at 37° C. only produced slight digestion of the nucleus and chromatin masses.

The author remarks justly that until the complete life-cycle of the amoeba is known, it cannot be identified with certainty, though the presence of an eight-nucleate cyst suggests affinity with *E. coli*.

H. B. F.

Bacillary Dysentery.

Bofinger. **Ueber eine durch den sog. Y-Bazillus hervorgerufene Ruhrepidemie.** [An Epidemic of Dysentery due to the So-called Y-Bacillus.]—*Deut. Militärärztl. Zeitschr.* 1914. Feb. 20. Vol. 43. No. 4. pp. 141-147.

An account of an epidemic of dysentery due to the Y-bacillus which broke out in a cavalry regiment in Württemberg in the summer of 1913. As dysentery has been practically unknown in the Württemberg army-corps for several years, the circumstances of its introduction in the present case appear to the author to be interesting. The infection seems to have been imported from outside by sundry visitors to a riding competition who came from Alsace, where dysentery is endemic. The meeting having been held on the 24th and 25th of May, the first case of diarrhoea showed itself on the 30th of the same month, *i.e.* after a four and a half day's interval, which is the incubation period of the Y-bacillus. The number of men affected gradually increased to 52 in all. There were no deaths, and the clinical symptoms mainly consisted in the passing of bloody motions, with a certain amount of fever. The same bacillus was isolated in every case, and it answered generally in its characters to the so-called Y-bacillus. Amongst the men of the regiment who presented no symptoms of dysentery, no less than 13 were found to be carriers of the bacillus by bacteriological examination of their stools. The usual precautions were taken against the further spread of the disease, and by the end of six weeks the epidemic had been stamped out, without any further extension amongst the regiments of the garrison.

S. R. D.

Keuper (E.). **Ueber eine Ruhrendemie bei kleinen Kindern.** [An Epidemic of Dysentery in Young Children.]—*München. Med. Wochenschr.* 1914. Mar. 3. Vol. 61. No. 9. pp. 474-476.

An account of an outbreak of bacillary dysentery occurring in a children's ward in a hospital at Frankfort. Out of 23 children 20 developed dysentery and there were six deaths. The disease was introduced by a child suffering from whooping cough. The mode of infection from child to child was not traced. The bacillus causing the epidemic was of the pseudo-dysentery type of Kruse.

S. R. D.

Desderi (Paolo). **Una Nuova Epidemia di Dissenteria bacillare in Piemonte.** [A Further Epidemic of Bacillary Dysentery in Piedmont.]—*Pathologica.* 1914. Feb. 15. Vol. 6. No. 127. pp. 99-101.

An account of an epidemic of bacillary dysentery occurring in the months of August, September and October, 1913 in the district of S. Damiano d'Asti, Piedmont.

Three hundred people were attacked, 12 fatally. There was a slight amount of fever, 38°-39° C. An organism resembling the dysentery bacillus was isolated but this could not be exactly placed in any of the known types. Mannite was fermented but there was no fermentation in glucose, saccharose or maltose broths. The organism was

non-toxic to rabbits. No agglutination with any of the stock dysentery sera which were available was obtained. The introduction of the disease was traced to soldiers who had returned from Tripoli and the spread to the water supply becoming polluted.

S. R. D.

Gettings (H. S.). **Dysentery Past and Present.** [Adjourned Discussion.]—*Jl. of Mental Science.* 1914. Jan. Vol. 60. No. 248. pp. 39-56. With 1 chart.

*This discussion was opened by Sydney Coupland, who showed very complete charts indicating the incidence of dysentery and also of dysentery and diarrhoea in the various asylums of England. With regard to Gettings's proposition that the disease was propagated by "carriers" he was seemingly very unconvinced but his knowledge of the bacteriology of dysentery may be gauged by the following quotation:—"It is gratifying that bacteriologists are working in this field although so far, I believe, they have not succeeded in isolating the specific dysentery organism, or, at any rate, unanimously agreeing as to its identity."

As an alternative to the spread of the disease in asylums by "carriers" he brought such propositions as the influence of cold and wet and certain sanitary defects.

After several other speakers had made remarks, Gettings replied and showed that wet and cold could not be important factors as some of the epidemics had occurred in very hot dry summers. With regard to the isolation of the bacilli causing the outbreak he stated that this was not a very difficult feat, "in fact his laboratory boy did it regularly," but the real difficulty was that the "carrier" gave no signs of the disease.

S. R. D.

Dresel (E. G.) & Marchand (Fritz). **Bakteriologische und klinische Beobachtungen bei Ruhrinfektionen.** [Bacteriological and Clinical Observations on Dysentery.]—*Zeitschr. f. Hyg. u. Infektionskr.* 1913. Dec. 12. Vol. 76. No. 2. pp. 321-349.

An account of an outbreak of dysentery observed in the Heidelberg clinique in the summer of 1911. The most notable point raised by the authors is that many contacts with the infected cases, although showing no symptoms of the disease, gave a positive agglutination. The dilution of serum which the authors considered significant both for the Flexner and Shiga organism was 1 in 100.

S. R. D.

Bates (L. B.). **Ants as Possible Transmitting Agents in Typhoid Fever and Bacillary Dysentery.**—*Proc. Canal Zone Med. Assoc. for the Half-Year April to Sept. 1912.* Vol. 5. Pt. 1. pp. 33-36.

The author records some experiments in which he fed ants on bread soaked in culture of *B. typhosus.* After intervals of from two to six days cultures were made from the intestinal contents. These cultures never revealed the presence of *B. typhosus.* Further experiments

*For the summary of Gettings's paper see this *Bulletin*, Vol. 3, p. 84.

were then carried out in which the ants immersed in broth cultures of *B. typhosus* were roughly dried with filter paper and allowed to crawl over plates of nutrient media 10 minutes, 30 minutes, 1 hour, 18 hours and 24 hours after the contact with the broth culture; in no case did any colonies of typhoid bacilli grow.

Seeking for an explanation of these results the author analysed the ants and found that one species contained as much as 1·43 per cent. of the body weight of formic acid, another species 2·1 per cent.

Formic acid was found to be a very strong antiseptic and the presence of this substance most probably accounts for the negative results obtained in the experiments. S. R. D.

Morison (J.) & Chitre (G. D.). **Interim Report on the Causes of Diarrhoea in Poona.**—*Proc. Second All-India Sanitary Conference*, 1912. Vol. 3. pp. 278–283. 1913. Simla: Govt. Central Branch Press.

The most important part of this paper is concerned with the results obtained by the bacteriological examination of the faeces.

This investigation was carried out in 95 cases of diarrhoea and dysentery. Some 1500 organisms were isolated and their sugar reactions ascertained. The authors were unable to identify any single organism as the cause of the diarrhoea and dysentery but Morgan No. 1; the bacilli of Flexner and Shiga, or two organisms of somewhat similar powers of fermenting sugars, were found in 47 cases.

Morgan's No. 1 bacillus was isolated from the stools of 16 cases, 10 of which were clinically suffering from acute diarrhoea, 6 from dysenteric symptoms.

Shiga's bacillus was also found in 16 cases, 8 of whom were cases of dysentery, 7 acute diarrhoea, and 1 suspected of having cholera.

Flexner's bacillus occurred in 10 cases, 6 being acute diarrhoea and 4 being dysentery.

Ten cases showed organisms having fermentation reactions approaching those of the recognised dysentery bacilli. S. R. D.

Dumas (R.). **Action de l'Emétine sur la Dysenterie Bacillaire Pure.**—*Bull. Soc. Path. Exot.* 1914. Feb. Vol. 7. No. 2. pp. 140–141.

A short note in which the author states that emetine is without any curative effect in pure bacillary dysentery. As bacillary dysentery seen in Saigon is generally of a very mild type, frequently subsiding with practically no treatment, cases of mixed amoebic and bacillary dysentery rapidly improve under emetine treatment; and this has in some cases given observers the impression that emetine had a curative action in the bacillary type of the disease.

S. R. D.

Lunn (W. E. C.). **Toxaemic Arthritis as a Complication of Acute Dysentery.**—*Jl. R. Army Med. Corps.* 1914. March. Vol. 22. No. 3. pp. 310–312.

The account of a case of dysentery at first believed to be amoebic, but emetine treatment was without effect and the administration of magnesium sulphate quickly brought about the disappearance of the

intestinal symptoms. During the patient's convalescence, however, symptoms of acute arthritis appeared, the right ankle, left knee and left elbow being the joints affected. The arthritis was intensely painful and was accompanied by a purpuric rash. The symptoms gradually subsided, the left knee joint requiring aspiration, and by this operation a clear sterile fluid was obtained. No investigations to isolate the dysentery bacilli from the stools appear to have been undertaken. S. R. D.

Mixed and Unclassed Dysentery.

Bahr (P. H.). **A Study of Epidemic Dysentery in the Fiji Islands with Special Reference to its Epidemiology and Treatment.**—*Brit. Med. Jl.* 1914. Feb. 7. pp. 294-296.

The author records his observations of the dysentery occurring in the Fiji Islands in the year 1910, when he had the opportunity of following some 170 cases. The usual type was bacillary, amoebae being demonstrated in the stools of only 11 cases. All nationalities—Indians, Fijians, Solomon Islanders, Europeans and half castes—were seemingly equally affected. Fifty-three per cent. of the cases occurred among prisoners undergoing sentence. Dysentery bacilli were isolated from the stools of 35 cases and from the intestinal mucosa of two cases post-mortem. The usual type was Shiga bacillus but the Y bacillus was nearly as common. Strong's bacillus was also observed and on three occasions an organism which has been described by Ohno, and has a feeble power of fermenting lactose, was isolated. The clinical manifestations of the disease varied greatly, there being considerable elevation of the temperature in some cases, others having a subnormal temperature throughout. No hepatic symptoms were observed in any of the bacillary cases. Only one case had a tendency to relapse. The serum obtained from 74 per cent. of the cases agglutinated one or other of the dysentery bacilli, but never before the sixth day of the disease.

Passing on to the epidemiology, the author noted that the maximum incidence of the disease occurs during the months of December, January, February, March, and April, that is, the period of highest mean temperature and the largest rainfall.

In searching for an explanation of this seasonal prevalence, the author, having excluded the possibility of the water supply being at fault, and direct contamination of food stuffs being unlikely as all races are equally affected although their dietaries vary markedly, sought for some indirect contamination of food and at once his suspicion fell upon the house fly, which is a veritable pest and is most numerous during those months when the dysentery is most rife. Investigating the bacterial flora of flies caught in the dysentery wards of the hospital, he isolated the Shiga bacillus on two occasions from their intestines; and he believes these observations have some value, taken in consideration with the seasonal incidence of the disease and concomitant prevalence of flies.

Continuing this experimental work on flies in this country, the author found that by raising flies from their pupae under as sterile conditions as possible and then feeding them on food contaminated with cultures of dysentery he was generally able at varying intervals to

isolate the dysentery bacilli from their intestinal tract. No evidence however could be obtained that multiplication of these organisms took place in the fly. Another interesting fact elucidated was that occasionally the fermenting properties of the dysentery bacilli were temporarily altered by passage through the intestine of the fly.

With regard to the treatment the first 53 cases were treated with salines only and the mortality was 13·2 per cent. Of the remaining 106 cases 34 were treated with salines and cyllin and the remaining 72 cases received in addition a dose of the Lister Institute polyvalent serum intravenously, the dose varying from 20 to 70 cc. Although the disease was apparently as severe as in the series of cases treated with salines only, the mortality was only 1·8 per cent. and these two deaths were not directly due to the dysentery.

This paper contains so many observations, so much experimental work and covers so much ground that it is very difficult to give a good idea of it in an abstract, and anyone interested in the subject of dysentery should consult the original communication. S. R. D.

DENIER. **Examen des Selles des Malades atteints d'une Affection Intestinale, pendant les Mois de Juin et de Juillet 1913.**—*Ann. d'Hyg. et de Méd. Colon.* 1913. Oct.–Nov.–Dec. Vol. 16. No. 4. pp. 1167–1174.

The author at the Saigon laboratory examined a large number of stools of patients suffering from intestinal infections to determine whether the organisms of amoebic or bacillary dysentery were present.

In mucous or serous stools he obtained the following results (July) :—

TABLE I.

Entamoebae of Dysentery	26
Bacilli ,, ,, ...	7
Mixed cases	8
Negative examinations	17
Total	58

Or, represented in percentages :

Cases where entamoebae were found	58·62 per cent.
Cases where bacilli were found ..	25·86 ,,
Negative cases	29·31 ,,

In faecal stools the figures were somewhat different as the subjoined table shows :—

TABLE II.

Entamoebae of dysentery	8
Bacilli ,, ...	7
Mixed cases	2
Negative examinations	21
Total	38

Or, represented in percentages :

Cases where entamoebae were found	26·31 per cent.
Cases where bacilli were found ..	23·68 ,,
Negative cases	65·51 ,,

G. C. Low.

Cunningham (J.) & Harvey (W. F.). **Dysentery, Problems and Proposals.**—*Proc. Second All-India Sanitary Conference,* 1912. Vol. 3. pp. 268–276. 1913. Simla: Govt. Central Branch Press.

This paper consists of a dissertation on the various disputed points in the etiology etc. of dysentery, the term dysentery being used in its widest sense. So many of these problems have since been elucidated by careful experimental work carried out in various parts of the world by competent investigators that it seems unnecessary to follow the authors through the maze of their reasonings.

One piece of experimental work is given in which the authors investigated the agglutinating power of the serum towards various types of dysentery bacilli found in a series of individuals taken at random. At the same time they enquired as to the clinical history of dysentery. The conclusion come to by this method was that there was but very slight correlation between a history of dysentery and a corresponding serum agglutination. S. R. D.

Bourret (G.). **La Dysenterie à Hué.**—*Bull. Soc. Path. Exot.* 1913. Dec. Vol. 6. No. 10. pp. 678–681.

The author examined the stools in 18 cases of dysentery (15 Europeans and three Annamites) and found amoebae in all. In six the amobae seen were certainly *E. tetragena.* Experiments on cats, faeces being inoculated intrarectally, were carried out in seven cases, but there was only one positive result and the animal recovered. Dysentery bacilli were sought for in six cases with one positive result, an organism of the Shiga type being isolated from the stools of a child aged five.

Dysentery bacilli and entamoebae were sought in the water supply with a negative result. S. R. D.

Lutsch (Walter). **Ueber Ruhrbehandlung.** [The Treatment of Dysentery.]—*München. Med. Wochenschr.* 1914. Mar. 3. Vol. 61. No. 9. pp. 476–477.

The author recommends the injection of a 2 per cent. solution of sodium salicylate into the large intestine in cases of dysentery. The quantity should be about 650 cc. for an adult and 90 cc. for a child one year old. These injections should be repeated every other day; they cause a good deal of pain. In addition 3 decigrams of calomel are given when the case is first seen and 3 decigrams of pulv. ipecac. cum opio every 4 hours. The type of dysentery (whether amoebic or bacillary) to be treated in this way is not mentioned. S. R. D.

Evers-Angaur. **Ueber die Behandlung von Dysenterie mit Chinosol.** [On the Treatment of Dysentery with Chinosol.]—*Trans. xvii Intern. Congress of Med., London.* 1913. Sect. xxi. Trop. Med. & Hyg. Pt. 2. pp. 75-76.

The author recommends chinosol for all forms of dysentery and bases his experience on 32 cases, of which 13 cases were amoebic. He states that since using chinosol he has had no deaths or relapses. The doses administered by the mouth were 4 grams daily given in watery

solution, 1 in 250, which was also used as enemata. Intravenous injections of 0·2 grams in 50 cc. of water were also found effective. In cases of amoebic dysentery the entamoebae rapidly disappeared from the stools.

S. R. D.

Mühlmann (M.). **Zur Aetiologie und Pathogenese der dysenterischen Leberabszesse.** [On the Cause and Origin of Liver-Abscesses.]—*Beiträge z. pathol. Anat. u. allg. Pathol.* 1914. Jan. 20. Vol. 57. No. 3. pp. 551-572.

The author, as prosector to a Russian hospital in the Baku oil-region, had occasion to notice the predominance of liver-abscess arising from dysentery amongst workmen of Russian nationality, which he attributes to intemperance. Out of 88 such cases coming to an autopsy, 77 were of Russian nationality, as against seven Armenians, two Persians, one Swede and one Lesgian (eastern Caucasian).

In order to test the hypothesis that alcoholism predisposes to dysenteric liver-abscess, the author fed 11 rabbits on food soaked in alcohol for periods ranging from two to four months. They were then injected with doses of dysentery-toxin obtained from a 14-day old broth-cultures of B. Shiga-Kruse. All developed without exception abscesses in the liver, besides the usual haemorrhagic inflammation of the caecum. Half the number received injections in the vein of the ear, and in the other half the abdomen was opened and injection made into the portal vein. Of eight control rabbits similarly injected, seven died within four days, but abscesses of the liver were only found in those which were suffering from coccidiosis. The author concludes from these experiments that liver-abscess is never more than a complication of bacillary dysentery in unhealthy subjects. Of the amoebae present he expresses the venturesome opinion that they only play the part of a complication (*nur die Rolle einer Komplication*) which makes the disease more serious. The news of Rogers's treatment would appear not to have reached the author at the time when he was writing his paper.

S. R. D.

Teisser (Pierre). **Presence de Spirilles dans l'Intestin, leur Importance; à propos de Deux Cas de Dysenterie Amoebo-Spirillaire.**—*Bull. Acad. Méd., Paris.* 1914. Jan. 13. 3ᵉsér. Vol. 71. (78ᵉAnnée.) pp. 51-52.

The record of two cases of dysentery in which in addition to amoebae large numbers of spirilla were found in the stools. These spirilla resembled those described by Muehlens. The author believes these organisms to have a pathological significance.

S. R. D.

Castellani (Aldo). i. **Note on an Intestinal Protozoal Parasite producing Dysenteric Symptoms in Man.**—*Jl. Trop. Med. & Hyg.* 1914. Mar. 2. Vol. 17. No. 5. pp. 65-66. With 2 plates.

ii. **A Further Case of Entoplasmosis.**—*Ibid.* Mar. 16. No. 6. pp. 83-84.

i. In the first of these papers the author states that, in three patients suffering from mild dysenteric symptoms, he has observed in the

stools what he believes to be a protozoal parasite, hitherto undescribed. These so-called parasites were bodies 45 to 55μ in diameter, oval in shape and in fresh specimens actively motile. Although he lays stress on this motility, no flagella could be made out. The protoplasm was vacuolated and no definite nucleus was seen. Preparations stained with Giemsa or Leishman showed the protoplasm blue and the vacuoles evenly distributed. In some of these bodies a mass of chromatin-like granules was to be seen; these the author believes to be a nucleus. All attempts at cultivation failed. He discusses at length the zoological position of this body and proposes the name of Entoplasma.

Two plates are given figuring these bodies, one being from a drawing, the other from microphotographs.

ii. The second paper adds but little information, being merely the report of a further case with the same symptoms, in which on examination of the stools the same bodies were seen. Preparations stained with iron-haematoxylin, in the author's opinion, confirmed his suspicion that the granules noted in his former paper were a nucleus.

[The author brings forward no further evidence that these bodies are protozoa or have anything to do with the causation of the dysenteric symptoms.] S. R. D.

Rogers (Leonard). **Dysenteries. Their Differentiation and Treatment.**—xi + 336 pp. With 10 plates, 2 charts and 3 diagrams. 1913. London: Henry Frowde & Hodder & Stoughton. [Price 10/6 net].

This book is reviewed on page 507.

Flagellate Dysentery.

Gäbel (Max). **Zur Pathogenität der Flagellaten. Ein Fall von Tetramitidendiarrhoe.** [A Case of Diarrhoea due to Flagellates belonging to the Tetramitidae.]—*Arch. f. Protistenkunde.* 1914. Mar. 28. Vol. 34. No. 1. pp. 1-34. With 2 plates.

The author gives an account of a case of flagellate diarrhoea together with a description of the causal parasite. The patient was a lady who went to Tunis in 1890, when 25 years of age. After four years, she returned home and then suffered from diarrhoea accompanied by liver swelling. This was perhaps due to the drinking of brackish, but boiled, water in Tunis. From 1897 onwards, each year the patient suffered from diarrhoea, as many as 20 motions being passed daily. The dejecta were not blood-stained, but frothy and in part whitish. The diarrhoea set in regularly in May and ended in October. The attack commenced with lassitude and some feverishness. Great pain occurred in the back. Improvement set in when the weather became cooler. The case was complicated by two heart attacks. In 1906 the violence of the diarrhoeic attacks gave rise to suspicion of cholera or typhoid, and the patient returned to Europe, improvement occurring as soon as she left Tunis. In 1909 she was in a German hospital for two and a half months, and was treated for a tumour in the umbilical region. In 1910 the diarrhoea ceased, and the patient went to Switzerland. While there she drank glacier water and the diarrhoea returned. She had attacks also in Tunis in the summers of

1911 and 1912, and at the end of 1912 came to Germany, and for a year was under the care of the author.

On examination the faeces of the patient were found to contain *Entamoeba coli* and numerous flagellates belonging to the Trichomonads. The examinations and treatment of the case are given at length. The morphology of the flagellates is described. They were small pear-shaped bodies 6·5μ to 8μ long by 5μ to 6μ broad, possessing three or four flagella and no undulating membrane. No supporting skeletal structure was present. A large cytostome, situated anteriorly near the nucleus, admitted food. Reproduction occurred by simple division, isogamous copulation and autogamy, the latter process leading to cyst formation.

The classification of the Tetramitidae is discussed at length and the author finally forms a new genus, *Difämus*, for the flagellates he describes, the new species being *tunensis*. He differentiates the new genus from *Tetramitus*, as it lacks an undulating membrane in its cytostome.

A summary of the opinions of previous workers on the pathogenicity of flagellates found in diarrhoeic cases is given, and the author believes that Difämus has often been confused with Trichomonas. He considers that its pathogenicity is established with certainty.

H. B. F.

Mayer (Martin). **Beitrag zur Emetinbehandlung der Ruhr. Die Wirkung des Emetins bei der Lamblienruhr.** [Contribution to the Emetine Treatment of Dysentery. Action of Emetine in Lamblia-Dysentery.]—*München. Med. Wochenschr.* 1914. Feb. 3. Vol. 61. No. 5. pp. 241–242.

The record of a case of dysentery admitted into the Hamburg hospital for seamen. The patient was a ship's officer returned from Bombay, who was attacked with dysentery two days after leaving that port. On examination the stools were found to contain cysts and vegetative forms of *Lamblia intestinalis*, with which were associated many spirochaetes. No amoebae were detected.

Emetine hydrochloride was given subcutaneously in ·05 gm. doses, five injections in all in seven days. Improvement was immediate; after the first dose only dead Lamblia cysts were to be discovered, and by the end of the seventh day no Lamblia could be demonstrated. The patient was discharged cured in fourteen days.

S. R. D.

Balantidial Dysentery.

Walker (Ernest Linwood). **Experimental Balantidiasis.**—*Philippine Jl. of Science.* Sect. B. Trop. Med. 1913. Oct. Vol. 8. No. 5. pp. 333–349. With 7 plates.

This interesting paper begins with a short historical account of balantidiasis since Malmsten reported the first case at Stockholm in 1857. The geographical distribution, mortality (up to 29 per cent.), pathology and histology of the lesions are then briefly reviewed. The main object of the memoir, to set forth the results of experimental work, is then reached. Monkeys were used. It is noted that "the

balantidium found in the intestine of the pig is generally considered not to produce any symptoms or lesions in its host." In faeces of the pig the balantidia are usually found encysted, but in human faeces they are generally motile. Dysenteric symptoms are extremely inconstant. *Balantidium coli suis* was used more frequently than *Balantidium coli hominis* because " human cases that showed a sufficient number of the parasites in their stools were not frequently obtainable and, moreover, it was especially desired to determine the parasitism and pathogenesis of the balantidium of the pig for the monkey." The experimental monkeys were either fed or injected rectally with faeces containing balantidia. Concerning the terms " parasitize " and " infect," the author uses the latter term only when the balantidia are found to have penetrated into the intestinal walls, the former term is used to denote those cases in which the organisms are found in the intestinal contents, but the intestines show no lesions.

The author's summary and conclusions are given at length :—

" 1. Parasitization of man with *Balantidium coli* is relatively common in the Philippine Islands.

" 2. The balantidia appear in the stools of parasitized individuals only at irregular intervals, and consequently infections, unless accompanied by clinical symptoms, may frequently be overlooked.

" 3. A large proportion of the pigs in and about Manila are parasitized with balantidia.

" 4. Balantidia are passed in the resistant encysted stage more or less constantly in the stools of parasitized pigs.

" 5. Morphologically *Balantidium coli suis* is identical with *Balantidium coli hominis.*

" 6. Forty per cent. of five monkeys fed or injected rectally with *Balantidium coli hominis* became parasitized.

" 7. Seventy and five-tenths per cent. of 17 monkeys fed or injected rectally with *Balantidium coli suis* became parasitized.

" 8. Monkeys parasitized with either *Balantidium coli hominis* or *Balantidium coli suis* show the parasites in the stools only at infrequent intervals.

" 9. Only a small proportion of the parasitized monkeys became infected. Of two monkeys parasitized with *Balantidium coli hominis,* one, and of 12 monkeys parasitized with *Balantidium colis suis,* one, showed the parasites in the tissues post mortem.

" 10. The early lesions of the intestine of monkeys infected with *Balantidium coli* consist only of a slight hyperaemia with or without punctiform haemorrhages.

" 11. Histological examination of the tissues of monkeys recently infected with *Balantidium coli* show changes, notably vascular dilation, minute haemorrhages, round-cell infiltration and eosinophilia, which distinguish them from lesions of bacterial origin.

" 12. *Balantidium coli* was never found entering the tissues through the lesions in ten parasitized monkeys having a colitis or ulcerations due to bacteria or other causes.

" 13. In those monkeys in which infection took place, the balantidia entered the tissues through the sound intestinal epithelium.

" 14. *Balantidium coli* can produce bacteriologically sterile abscesses in the submucosa of an infected intestine.

" 15. *Balantidium coli* is the primary etiologic factor in the symptoms and lesions of balantidial dysentery.

" 16. The latency prevalent in balantidiasis of man is due chiefly to the fact that the patient, although parasitized, is not infected with *Balantidium coli,* but in part to the chronicity of the ulcerative process in infected cases.

"17. Every person parasitized with *Balantidium coli* is liable sooner or later to develop balantidial dysentery.

"18. *Balantidium coli suis* is identical with *Balantidium coli hominis.*

"19. The domesticated pig is the chief source of infection in the balantidiasis prevalent in the Philippine Islands.

"20. Therefore, efficient prophylactic measures against balantidiasis in the Philippine Islands should be directed against these animals, which should be confined and not allowed to run in yards and dwellings."

The plates show photomicrographs of sections of large intestine of experimentally infected monkeys, sections of mesenteric glands of monkeys, and sections of large intestine of man dead from balantidial dysentery.

H. B. F.

CHOLERA.

Ross (W. C.). **The Epidemiology of Cholera.**—*Proc. Second All-India Sanitary Conference.* 1912. Vol. 3. pp. 152-158. 1913. Simla: Govt. Central Branch Press.

The author advances the proposition that the amount of effort on the part of the Sanitary Authority to prevent different diseases should vary as the virulence of the disease and the efficiency of the means of prevention at our disposal. Judged from this point of view cholera prevention is relatively neglected. The chief factors in the spread of cholera are carriers, climate, crowds, contamination of food and drink and bad conservancy. All the factors are considered individually, but conservancy receives the largest amount of attention. The life history of the fly, its rate of reproduction under different conditions of moisture and warmth, and its bacteriology are briefly discussed. Conservancy is notoriously bad in India, and its improvement would be the most successful method of effectively breaking one of the links in the chain of factors necessary to the production of an epidemic. There is nothing very new in the paper.

W. J. Penfold.

Low (R. Bruce). **The Manifestations of Cholera throughout the World during the Years 1911 and 1912.**—*Forty-Second Ann. Report of the Local Govt. Board.* 1912-13. Supplement containing Report of Medical Officer for 1912-13. Appendix A. No. 2. pp. 88-147. 1914. London: Printed under the Authority of H.M. Stationery Office. [Cd. 7181.]

The paper is of the nature of a summary itself and it is difficult to give any just idea of it.

In India in 1910 and 1911 the mortality rate was 1·9 and 1·48 per 1,000 respectively. The reports for 1912 are not yet complete. In the Bengal presidency the mortality rates from cholera for 1911–12 were 1·49 and 2·1 per 1,000 respectively, the average for the last five years having been 2·45. In Calcutta the cholera deaths in 1911 were fewer than in any year for the last ten years. The mortality rates of all the other Indian provinces are passed in review, recent cholera rates being sometimes smaller and sometimes larger than average rates over long periods. The causes of the continued large incidence of the disease in India are considered in some detail, no new points, however, emerging. The seasonal distribution of cholera in the different provinces is largely dealt with in different tables.

In a similar way French India, Malay States, Dutch East Indies, Siam, Indo-China, China, Japan, the Philippines, Egypt, Arabia, Turkey and many other countries are dealt with—frequently, however, on but a very unreliable and incomplete statistical basis. The cases of the European and American countries, which received during these years so many persons carrying cholera germs and still had no local epidemics, is gone into in much interesting detail. The paper is extensive and would well repay perusal by any interested in the wider aspects of cholera epidemiology.

W. J. P.

Gasiorowski (Napoleon). **Die Cholera in Galizien im Jahre 1913.** —*Das Oesterreich. Sanitätswesen.* 1914. Mar. 26. Vol. 26. No. 13. pp. 161-180. With 4 text figs.

In 1913 an epidemic of cholera occurred in the Skole district and the author carried out the necessary bacteriological work required in the epidemic. He established in a local station the movable cholera laboratory provided by Laütenschläger and examined all material there. In respect of technique it is interesting to note that peptone water enrichment followed by ordinary agar plating was even more efficacious than the use of Pilon's special medium when dealing with faeces containing only few vibrios. 574 samples of faeces and 85 of water were examined. Amongst 44 suspected cases of cholera only 20 were found positive on bacteriological investigation; the remaining 24 were shown to be definitely free from cholera by post mortem or other methods of examination; so that the author concludes that no genuine cases were missed by the bacteriologist. Brief clinical histories of each of the 20 positive cases are given. 55 per cent. were fatal. About half of the cases were extremely acute—the algid stage supervening in half to one hour from the onset of the disease. The naturally debilitated persons attacked had a smaller case mortality than the apparently strong and healthy. The sera of six patients were examined for agglutinins from 12 to 17 days after convalescence had been established, when it was found that two reacted definitely in dilutions above 1/20. 297 contacts were examined as suspected carriers and only five found positive—25 per cent. of the number of actual cases of the disease.

From the 85 samples of water examined from the River Opor by the peptone water enrichment method the specific vibrio was isolated four times. The epidemic appears to have been introduced into Galicia from neighbouring infected Hungarian villages through direct or indirect contact and to have spread locally by contact. No evidence was found suggesting that the river materially contributed to the spread of the disease.

As preventive measures used may be mentioned:—Control over traffic from Hungary with the exclusion of importation of fruit. Instruction to the people how to avoid cholera. Disinfection of the River Opor with lime, which was, however, not very effective. Isolation of the patients and contacts.

W. J. P.

Craster (Charles V.). **Ship-Borne Cholera. The Sea as a Factor in the Transmission of Asiatic Cholera.**—*Jl. Amer. Med. Assoc.* 1913. Dec. 20. Vol. 61. No. 25. pp. 2210–2214.

The paper deals with the work of the quarantine station of New York. From June 14th to August 18th, 1911, the ships entering the port reported six cases of cholera fatal at sea, four cases occurring at sea and well on arrival, and six cases occurring at sea and still ill on arrival. In addition fifteen cases developed at quarantine, three amongst persons released from quarantine and one amongst the quarantine attendants. 31 carriers were detected. On July 16th a Treasury order made it necessary to take rectal swabs from all steerage passengers. The cotton swab was moistened with peptone water and

inserted above the sphincter, making sure that a fair sample of faeces was removed. The swab was dropped into peptone water and the tube numbered. After six hours this was subcultured into another peptone water tube and after nine or ten hours a sample was plated out and suspicious colonies were examined for morphology with dilute carbol fuchsin and, if necessary, for agglutination. All cases found carrying the vibrio were isolated.

Over 100 cholera-like vibrios were isolated during the researches; they produced little or no indol and were all non-pathogenic to animals, while some of them formed pigment. The value of agglutination, Pfeiffer's reaction and complement fixation in cholera diagnosis is discussed but nothing new brought forward.

The carriers isolated at the quarantine station excreted vibrios usually for a few days to two weeks or more; in one case, however, vibrios continued to appear up to the 54th day. If three examinations of faeces at intervals of two days were found negative, the patients were released from quarantine.

The actual cases of cholera treated were all found to have a high rectal temperature with remissions; the skin temperature was subnormal. The oscillations of the rectal temperature were equal to as much as six degrees in the day.

W. J. P.

Turner (J. A.). **The Bacteriology of Cholera and its Relation to the Spread of the Disease from the Point of View of the Health Officer.** —*Proc. Second All-India Sanitary Conference.* 1912. Vol. 3. pp. 236–251. 1913. Simla: Govt. Central Branch Press.

The Bombay municipal laboratory examined a large number of samples of water, milk, foods, etc., from January to August, and some of their results are set forth in this paper.

A vibrio isolated from a well in a mosque is described; it gave all the typical reactions of the cholera vibrio, but was not agglutinated by the specific serum nor did it give Pfeiffer's reaction. In spite of this, however, the author concluded this well was infected with cholera. No endeavour was made to discover whether this doubtful vibrio had the specific agglutinogen. The author concluded that the vibrio changes in water so much as to become quickly unrecognisable, and suggests that during a cholera epidemic all water containing a vibrio should be held to be dangerous. Illustrations of the spread of the disease by personal contact are detailed. The account of the bacteriological methods employed in the laboratory shows nothing new. Many experiments on the variability of cholera germs in tap water are recorded in tabular form.

W. J. P.

Sabella (P.). **Fisiologia e Patologia della Pelle nella Tossi-infezione Colerica.** [The Physiology and Pathology of the Skin in Cholera.] —*Giorn. Ital. d. Malat. Veneree e d. Pelle.* 1913. Oct. 30. Vol. 54. (Anno 48). No. 5. pp. 527-551,

The author treats of the disease as a toxic infection and endeavours

to account on this basis for the skin disturbances that arise. The skin eruptions observed by the author in a series of cases are described without anything very striking emerging.

W. J. P.

Balkan War Experiences.

Rosenthal (Franz). **Medizinische Eindrücke von einer Expedition nach Bulgarien, speziell ein Beitrag zur Diagnose und Therapie der Cholera asiatica.** [Medical Impressions of an Expedition to Bulgaria with Special Reference to the Diagnosis and Therapy of Cholera asiatica.]—*Berlin. Klin. Wochenschr.* 1914. Feb. 23. Vol. 51. No. 8. pp. 342–344.

In the autumn of 1913 the author had charge of a cholera hospital in Philippopolis. The hospital was of wood but quite well arranged and provided with a bacteriological laboratory. Rosenthal treated 283 cases of genuine cholera and had a mortality of 25·7 per cent. The patients were brought in a cab-like cholera ambulance, frequently from distances as great as 20 km. They were not infrequently moribund on admission.

About a quarter of the cases showed no or only trifling cyanosis. Some slight cases had the clinical appearances of ordinary enteritis without retraction of the abdomen, but still had the typical blood picture of cholera, to which latter the author attaches great importance, especially for early diagnosis. The cyanosed cases showed the ears, lips and nose deeply blue and cold, the skin shrivelled and inelastic, eyes sunken, conjunctivae reddened, voice hoarse and breathing superficial and quick. On the first day the cases showed usually complete suppression of urine. Pains and cramps of the extremities were a marked feature. In two of the cyanosed cases marked cyanosis of the penis was present; they were both fatal and showed post mortem marked bluish black inflammatory swelling of the mucous membrane of the large intestines and rectum. In the case of old people he saw many deaths result from relapses of diarrhoea—the stools however being free from vibrios during the relapse.

Rice watery stools were by no means uniformly present even in the severest cases; sometimes the stools were pasty, blood stained or coloured with blue. Tenesmus was only present in one case and lasted from the seventh day till death six days later. This case post mortem showed membranous formation in the large intestines.

In two cases, towards the end of the first week pneumonia developed. These showed no rise of temperature and ended fatally. Post mortem one was found to be a lobar pneumonia of the lower right lobe, the other a broncho-pneumonia affecting both lower lobes. In both cases marked pleurisy was present. Pleurisy alone was a frequent complication, especially on the right side. Suppurative parotitis, furunculosis, psychical disturbance of a paranoia-like character, corneal ulcer, skin rashes (3 cases of a papular character chiefly distributed in the regions of the elbows and buttocks) were amongst the complications met with. Post mortem, marked enlargement of the gall bladder, redness and swelling of the mesenteric glands, and local fibrinous peritonitis between the gall bladder and adjoining small intestines were frequently present.

Rosenthal found the blood picture in the early days of the disease extremely valuable in diagnosis. A very marked polymorphonuclear leucocytosis is present, the large lymphocytes are as numerous or more numerous than the small, and eosinophiles are absent. In treatment digitalis, camphor, adrenalin and saline solution were used, and for the coma, from which a fair number of patients died, 3 per cent solution of sodium bicarbonate was injected subcutaneously with marked success. The solution was not sterilised as some sodium carbonate is produced in that way with unpleasant results. This solution, in quantities up to one litre, was frequently given.

W. J. P.

Aumann. **Ueber die Maassnahmen bei der Bekämpfung der Cholera in Serbien 1913.** [The Servian Anti-Cholera Campaign of 1913.] —*Berlin. Klin. Wochenschr.* 1914. Mar. 30. Vol. 51. No. 13. pp. 589-592.

Personal prophylaxis was the essential idea in the author's work. Prevent the organism entering the body and increase the resistance of the body to its attack.

House to house inspection was resorted to, in order to discover and isolate cases which were not notified. India-rubber gloves were used in examining and handling patients. Public notice of the danger of handshaking was issued. It was further enjoined that :—

(1). Pottery before being used should be washed in spirit and the surface disinfected by burning ; (2). Only such foods should be used as admitted of satisfactory sterilization ; (3). Diarrhoea was to be avoided, as far as possible, by suitable dieting ; (4). Acid drinks and lactic acid in tea should be used as weak internal disinfectants.

Vaccination was also largely practised.

House to house visitation to discover cases was resented, but was carried out with the assistance of the police. During this work two clinical signs were found to be of value in detecting cases which were convalescent (and ought therefore to have been isolated), *viz.*, an easily compressible pulse and a black coating of the middle third of the posterior portion of the tongue. The latter condition was most marked about the seventh to eighth day of convalescence. Friends were allowed to visit isolated patients quite freely, care being taken to prevent contact, and this familiarity with the treatment and the hospital soon won the confidence of the public.

For the isolation of the vibrio the author used peptone water enrichment. He condemns Dieudonné's plates but appears to betray ignorance as to how they should be used. Nothing of interest in the way of treatment appears in the paper.

W. J. P.

Strisower (Rudolf). **Meine Erfahrungen aus der Choleraepidemie in Serbien im Sommer 1913.** [Experiences in the Cholera Epidemic in Servia in the Summer of 1913.]—*Wien. Klin. Wochenschr.* 1913. Dec. 11. Vol. 26. No. 50. pp. 2079-2081.

The Bulgarian troops which were transported from Chataldja to Macedonia carried cholera with them. During and after the initial battles of the second Balkan War cholera appeared suddenly. After

the battle near Kirvolak 1,800 cholera cases were housed in Vieles, 1,800 in Uskub and 2,000 in Kumanowo and many more in similar centres. Probably the sudden character of the outbreak was due to the contamination of drinking water. No attention was paid to the provision of a good water supply and soldiers drank knowingly of contaminated streams. The mortality was enormous but exact figures were not forthcoming. Treatment was negligible in amount. Occasionally a little opium or heart stimulant was given but scarcely ever any saline injections. Bacteriological technique was as follows :—

Peptone water cultures from faeces were examined microscopically after six hours ; if suspicious vibrios were seen, Dieudonné's agar plates were inoculated. The original peptone water cultures were used for microscopic agglutination after 18 hours ; if positive with a specific serum in 1/800 the diagnosis was given as positive. In cases negative by this method microscopic agglutination was done with the colonies of the Dieudonné plate, or subcultures from the peptone water culture into fresh peptone water were made and examined for agglutination the next day, in impure culture.

The clinical histories showed nothing unusual. In the latter stages of the epidemic iodine, quinine and also permanganate of potassium were given as treatment, but the mortality rate remained high in spite of the use of these drugs. It was found, however, that the patients treated with permanganate were not so frequently chronic carriers of the vibrio. W. J. P.

Moustouses (Konstantin J.). **Die Cholerabekämpfung in der griechischen Armee während des griechisch-bulgarischen Krieges.** [The Anti-Cholera Campaign in the Greek Army during the Greco-Bulgarian War.]—*Der Militärarzt.* 1914. Mar. 7. Vol. 48. No. 4. pp. 65-71. [Ausgegeben mit Nr. 10 der *Wien. Med. Wochenschr.* 1914.]

During the Greco-Bulgarian War it was the custom to have the field hospitals provided with a separate cholera division, so that no mixing of wounded and cholera-infected soldiers occurred. The army was provided with a large number of field laboratories of the Lautenschläger pattern and in addition it had two principal laboratories, one stationary in Salonica and one movable. The duty of these principal laboratories was to supply media, vaccines and such like to the field laboratories and of course to do local bacteriological work. The disease never got out of control in the Greek army though, on forward movements being made to occupy territory vacated by the Bulgarians, explosive outbreaks took place occasionally. In one body of men 100 cases occurred in one day but, on removing the camp, only a few straggling cases continued to occur. The small explosive outbreaks were believed to be due to water contamination. Rogers's hypertonic saline was the chief treatment used and gave excellent results. A series of cases which had this treatment plus anti-cholera serum gave practically the same results as a control series with the saline treatment only.

Unlike Haffkine results, it was found that cholera vaccination (Kolle's vaccine) did diminish the case mortality. In a comparable series the unvaccinated showed a 34 per cent. case mortality, as against

a 20 per cent. case mortality in the case of those who had been twice vaccinated. It was further striking that only two staff officers and doctors refused to be vaccinated against cholera and these two were the only individuals to die of the disease in their respective ranks.

W. J. P.

Arnaud. **Le Choléra dans l'Armée hellenique.**—*Bull. Acad. Méd., Paris.* 1914. Séance du Mar. 17. 3 ser. 78 année. Vol. 71. No. 11. pp. 384-386.

The number of cases of cholera that occurred in the Greek army during the second Balkan War was 1,801 with 348 deaths. 93,868 soldiers were vaccinated; of these 72,652 had two inoculations, and 21,216 only one dose of vaccine; 14,332 were not vaccinated even once. The incidence of cholera amongst the three groups was ·43, 3·12, and 5·75 per cent. respectively.

Anticholera serum (Kolle) was not found of definite value in treatment. The low cholera incidence in the Greek army appears to have been due to the facts that:—1st, the personnel was well vaccinated; 2nd, the army was in almost constant movement and did not rest in any area liable to be contaminated; 3rd, other effective hygienic measures.

W. J. P.

Treatment.

Loewy (Otto). **Choleratherapie durch Infusion hypertonischer Kochsalzlösung, Jodtinktur und hypermangansaurem Kalium.** [The Treatment of Cholera by Hypertonic Saline Solution, Iodine Tincture and Potassium permanganate.]—*Wien. klin. Wochenschr.* 1914. Apr. 16. Vol. 27. No. 16. pp. 467–470.

The author draws attention to the fact that hypertonic saline solution was recommended for the treatment of diarrhoea and cholera by Gaertner and Beck in 1893. Rosner, acting on their suggestion, in 1895 treated seven cases of cholera with four deaths; he used, however a 10 per cent. salt solution. Rogers is credited with having actually demonstrated that the method when properly carried out is effective in markedly reducing the cholera mortality. The author experimentally examined the thesis of Rogers to the effect that potassium permanganate destroyed the cholera toxin. He found this to be true; a lethal dose of toxin given simultaneously with the permanganate to experimental animals failed to kill.

An account of the treatment of 18 cases is then given, in which Rogers's treatment was used and tincture of iodine as recommended by Kraus. Three cases (16 per cent.) died, none during the acute cholera attack. The clinical histories of the cases do not show anything noteworthy.

W. J. P.

Lunn (W. E. C.). **Case of Cholera treated by Hypertonic Saline Infusion.**—*Jl. R. Army Med. Corps.* 1914. Apr. Vol. 22. No. 4. pp. 444–446. With 1 curve.

The patient was seized with vomiting, diarrhoea and cramps in the legs at 2 a.m. In the afternoon of the same day the motions were

almost continuous and forcible vomiting of green rice-watery fluid was frequent. Thirst was intense and the cramps much aggravated. Two and a half pints of hypertonic saline were given intravenously at 7 p.m. and immediately afterwards all his symptoms abated, pulse rate fell and the patient made an uneventful recovery.

W. J. P.

Stumpf (Julius). **Ueber Cholerabehandlung und Choleraprophylaxe auf Grund meiner Erfahrungen in Nisch und Belgrad.** [The Treatment and Prevention of Cholera in the Light of my Experiences in Nish and Belgrade.]—*München. Med. Wochenschr.* 1914. Apr. 7. Vol. 61. No. 14. pp. 759–763.

The paper is written in a semi-popular style. It details the experience of the author in using his own "Bolus" treatment on cholera patients. The treatment consists in giving large quantities of a special earth (Ton, Aluminium Silicate) in a relatively small quantity of water. It has been largely used in Germany for diarrhoea, food poisoning and the like. The author treated 30 cases in Nish from their first entrance into the hospital until the end of the case and every one was cured. One case, on the point of death when the author first entered the hospital, had the treatment and died. Some of the 30 cases which recovered had cholera of the most acute type. The author had also very good results in Belgrade and in the country. One gets the impression from reading the paper that the remedy is almost a specific. Merck in Darmstadt supplies the bolus material in packets of 200 gm. each. The contents of one of these is suspended in 400 cc. of water and the patient made to drink it. If it is vomited a further dose is given, immediately after the vomiting, in continual small sips. Its effect is almost immediate.

W. J. P.

Candiotti. **Le Transport Colloïdal des Médicaments dans le Choléra.** —*Arch. de Méd. et Pharm. Navales.* 1914. Mar. Vol. 101. No. 3. pp. 205–218.

A brief summary is given on the subject of the carriage of medicaments by colloids in various conditions of man and animals. The essential purpose of the paper is to give the results obtained by treating cholera and dysentery by injection of a colloidal complex of magnesium chloride and methylene blue. Dr. Evelpidès, between the 25th October and the 31st December, 1912, treated 443 patients by this method, in a Greek hospital, with 121 deaths. Discarding the cases actually *in articulo mortis* on arrival at the hospital, the case mortality was 24·4 per cent. He treated a further series of cases (33) all believed at the time to be fatal, with only 11 deaths. This series was vitiated by the use of other treatments simultaneously.

Dr. Riquoir, the discoverer of the treatment, went to the East to test it. When it was used alone he had four deaths in a series of four cases treated. He found, however, that the addition of sublimate to the complex rendered it useful, as after this modification he had only one death in eight cases treated. Dr. Djemil Suleyman used the compound, without added sublimate, in the treatment of 50 cases of dysentery and had no deaths amongst them. W. J. P.

Bacteriology.

Greig (E. D. W.). **On the Vitality of the Cholera Vibrio outside the Human Body.**—*Indian Jl. Med. Research.* 1914. Jan. Vol. 1. No. 3. pp. 481–504. With 1 chart.

The author examined 94 samples of stools from cholera patients. These stools were of the typical rice watery character. They were kept in the dark, in conditions to prevent evaporation, and samples were examined each day to see when the contained vibrios died out.

The longest time they remained alive and recoverable was 17 days. The average time varied during the year, being longer in the cold weather and shorter in the hot weather; in February it was 7·7 days and in June 1·2 days. A series of tables is given showing the daily population of cholera vibrios in samples of rice watery stools under examination, but this is probably not very accurate. The bearing of these observations on the epidemiology of cholera is briefly reviewed.

W. J. P.

Stamm (Johannes). **Zur Frage der Veränderlichkeit der Cholera-vibrionen in Wasser.** [Alterations in Cholera Vibrios in Water.]—*Zeitschr. f. Hyg. u. Infektionskr.* 1914. Jan. 15. Vol. 76. No. 3. pp. 469–542. With 2 plates.

The paper contains a large amount of new experimental work. Vibrios were passed through fresh spring water and river water a large number of times, the individual passage lasting about five days as a rule. The water to which the specific vibrios were added was not sterile, but alterations alleged to have occurred in the specific vibrios are quite satisfactorily proved in the majority of cases.

The most interesting results of all are those dealing with agglutination. Genuine strains, which agglutinated with dilutions of one in 20,000 of specific serum, after being passed through water failed to agglutinate with a dilution of one in 50. These new strains did not agglutinate with the serum of the original strain, but they did agglutinate with a serum produced by their injection into rabbits. It is exceedingly interesting that the sera so produced agglutinated not only the variants but also the original and other genuine cholera strains. That is, passage through water removes the power of reacting with the specific agglutinin, but the altered organism still retains the specific agglutinogenic property of genuine cholera strains. This work is important in so far as cholera-like vibrios found in water, which do not agglutinate, have been held by various workers to be saprophytic and not genuine cholera vibrios, but if Stamm's work be confirmed the non-agglutinating vibrios ought now to be further investigated and those that contain the specific agglutinogen may be safely reckoned as specific organisms.

The other variations dealt with are morphology, number of flagella, indol production and pigment production. The facts about the latter deal chiefly with the production of white pigment. Morphological variations are described as coccoid, spermatozoa-like, spiral forms and numerous other varieties.

A few experiments were done with sterile water and similar changes produced.

It took over two months to effect the removal of the agglutinating power by this method and it was only irregularly produced.

The nature of the changes are discussed without anything new being brought forward.

W. J. P.

Defressine (C.) & Cazeneuve (H.). **Sur la Persistance du Vibrion cholérique dans l'Organisme humain et dans quelques Milieux Extérieurs.**—*Arch. de Méd. et Pharm. Navales.* 1913. Dec. Vol. 100. No. 12. pp. 438-448.

Old epidemiological evidence is brought forward to show that cholera spreads along rivers, canals, quays, etc. The occasions on which the cholera vibrio has been found living in river and sea water are summarised, and the experimental evidence to show that it may survive a long time in impure sea water is discussed. The authors found that sea water (Toulon) inoculated with the *V. cholerae* and kept at 37° C. still showed living cholera germs after 15 days. A brief resumé of the literature on the effect of high concentration of salt on the growth of the cholera germ is brought forward to support the reasonableness of its long survival in sea water. The evidence of the authors that the cholera vibrio is able to thrive for long periods in fresh water is extremely interesting. Several vessels took fresh water from a common source at different times and from all these different samples of the same water cholera germs were isolated, in one case as long as 15 days after taking in the supply; moreover the number found compared with the number in the original supply showed that they had grown in the ships. The author states running water may remain infected for one month without reinfection occurring. Six months after the cholera epidemic in Toulon (1911) had ceased, the mud and slime from the bed of the local river were examined for cholera germs. These were found and cultivated and it appears probable to the authors that the bed of the river had remained contaminated for this period. Several other similar cases are cited.

W. J. P.

Flu (P. C.). **Onderzoekingen over de Agglutinabiliteit van Cholera-vibrionen mit de Galblaas van Choleralijders.** [On the Agglutinability of Cholera Vibrios isolated from the Gall Bladders of the Dead.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1913. Vol. 53. No. 6. pp. 808-831.

A brief resumé of 18 cases is given. The cholera vibrio was isolated from eight of them. 1 cc. of bile was added to peptone water in order to isolate the organisms. Three of the strains agglutinated badly with a specific serum. Two of these after ten passages on agar agglutinated well, but one still agglutinated only in a dilution of 1/200 though the titre of the serum was 1/10,000.

A comparison of the virulence of the strains isolated from the gall bladder and intestine respectively showed only trifling differences.

An attempt was made to remove the agglutinating power of genuine cholera strains by growing on bile, but with no marked success. It was found that growth on bile and immune cholera serum did diminish the agglutinating power.

W. J. P.

KABESHIMA. **On the Spontaneous Agglutination of Cholera Vibrios.** [In Japanese.]—[*Jl. of Bacteriology*, Japan. 1913. No. 216.].

The author worked under the guidance of Professor SHIGA in KITASATO'S Institute and concludes:—

1. It is not rare to see old cholera vibrios agglutinate spontaneously.
2. Cholera vibrios cultivated in an immunised serum bouillon agglutinate spontaneously.
3. The spontaneous agglutination of old cholera vibrios can be prevented by adding formalin.
4 & 5. Most of the spontaneously agglutinable cholera vibrios lose this characteristic in 0·1-0·2 per cent. saline solution and when cultivated on Kabeshima's agar media.
6. The agglutinin-fixing power of the spontaneously agglutinable cholera vibrio does not differ from that of the normal type of the vibrio.

M. Kumagawa.

GREIG (E. D. W.). **On the Cultivation of the Comma Bacillus from the Lung in a Case of Cholera.**—*Indian Jl. Med. Research.* 1913. Oct. Vol. 1. No. 2. pp. 270-275. With 2 coloured plates.

The finding of the comma bacillus in the lung is interesting from three points of view. It supports the view that cholera is occasionally at least a septicaemia; it suggests attention to further preventive methods which have hitherto escaped notice; it affords an explanation of the pneumonia which occasionally complicates cholera.

The case recorded ended fatally on the third day of illness. The only facts suggesting respiratory trouble during illness were a quickening of the respiration to 30 per minute, and the presence of crepitations in both sides of the chest.

Post mortem: Oedema of right lung was found and smears, sections and cultures from it all showed the presence of the comma bacillus. The bacilli occurred in clumps in the smears, and were found in the alveolar spaces in the exudate in the case of the sections. The sections of the alveoli further showed many recently formed capillaries, an appearance which Greig has constantly found in experimental and natural cholera lesions. The bile of the case contained the cholera vibrio. Sections of the kidney showed comma bacilli.

W. J. P.

GREIG (E. D. W.). **The Precipitation of Bacterial Protein by Concentrated Salt Solution and its Relation to the Bacteriological Diagnosis of Cholera.**—*Indian Jl. Med. Research.* 1913. Oct. Vol. 1. No. 2. pp. 276-293. With 1 plate.

LIEFMAN showed that the majority of cholera strains were strongly agglutinated in 90 per cent. magnesium sulphate solution, while only two out of 22 non-agglutinating vibrios were so agglutinated. Greig has examined this result, using as his material a large number of recently isolated strains of agglutinating and non-agglutinating vibrios. The agglutinating strains were derived from human sources, the non-agglutinating strains partly from human sources and partly from tanks in Calcutta. He found that of 176 agglutinating strains 164 were completely salted out in 90 per cent. magnesium sulphate solution, while the other 12 were salted out only in traces in this concentration. Of 41 non-agglutinating vibrios 27 were not salted

out at all by 90 per cent. magnesium sulphate, and eight only in traces, while six were fully salted out. Of these six non-agglutinators which were salted out completely, four were isolated from mild cholera cases and none of these four strains was able to call forth specific agglutinin on being used to immunise rabbits.

These results show that salt agglutination and serum agglutination show a close but not absolute parallelism.

W. J. P.

Penfold (W. J.) & Violle (H.). **A Method of Producing Rapid and Fatal Intoxication with Bacterial Products, with special reference to the Cholera Vibrio.**—*Brit. Med. Jl.* 1914. Feb. 14. pp. 363-366.

Under ordinary conditions intravenous injection of broth culture of *V. cholerae*, whether filtered or not, does not kill a rabbit, even in relatively large amounts (e.g. 2–3 cc. per kilo or more). This fact the authors confirm, and they show also that the rabbit will tolerate the intravenous injection of huge doses of freshly distilled water (1/30 of its weight per kilo), the addition of 1 or 2 c.c. of sterile broth making no apparent difference. If, however, a small dose of the cholera culture, e.g. 0·17 c.c. or less of whole culture or 0·5 c.c. of filtered culture, be given along with the distilled water, the result is rapid death, sometimes at once, usually within two hours. The same fatal result was obtained when the culture and the distilled water were given separately with an interval of 20 minutes to two hours, and equally whether the water or the culture was given first.

Similarly marked toxicity in presence of distilled water was obtained with cultures of *B. proteus*, *B. pyocyaneus*, *B. dysenteriae* (Shiga), *B. prodigiosus* and fowl cholera; and, while it was not obtained with anthrax, subtilis or pneumococcus, the authors state that they have not yet found a certainly negative result with any bacterial products. The poisonous action of potassium cyanide and strychnine was not made more acute by addition of distilled water.

Some evidence is adduced suggesting that the lysis of the red blood cells by the distilled water is an important factor in the augmentation of the toxicity of the bacterial cultures.

J. Henderson Smith.

Van Loghem (J. J.). **The Difference between Vibrio Cholerae and Vibrio El Tor.**—*Trans. xvii Intern. Congress of Med.* London. 1913. Section xxi. Trop. Med. & Hyg. Pt. 2. pp. 53-55.

The author disagrees with the view that the haemolytic differences between the El Tor vibrio and the Vibrio cholerae are rather quantitative than qualitative. The cholera vibrios, though they are unable to dissolve red cells in fluid media, produce on blood agar plates a clear transparent zone similar to that obtained with the El Tor vibrios; this fact has led to the view that the differences are rather of degree than of kind. If, however, goat red cells be used to add to agar plates, it is found that the zone produced by the El Tor vibrio appears quickly, is not absolutely clear, and shows a reddish tint, while that produced by the true cholera organisms appears more slowly, is absolutely clear and has a

greenish hue. Examined microscopically the El Tor colony zones give the spectrum of oxyhaemoglobin, while the cholera colony zones are entirely free of it. The El Tor vibrio is really haemolytic, while the cholera vibrios are rather haemo-digestive. This view is supported by the fact that, if cholera strains are arranged in haemodigestive capacity, they are also arranged in the order of their liquifying power in respect of gelatine.

Further, haemodigestibility is a very unstable power in the cholera strains, while haemolytic power is very stable in the El Tor vibrios.

W. J. P.

Rotky (Karl). **Immunisierungsversuche gegen den Vibrio El Tor.** [Experimental Immunization against the El Tor Vibrio.]—*Zeitschr. f. Immunitätsforsch. u. experim. Therapie.* 1. Teil. Orig. Mar. 10. Vol. 20. No. 6. pp. 644–672.

The experiments recorded in the paper support the view that there is an antiaggressin immunity produced in immunization with the vibrio and specific exudate. Further, by the treatment of guinea-pigs with *sterile exudate* only a serum is obtained which, after having all its antibacterial substances removed by passing El Tor vibrios through it, is found to protect guinea-pigs and mice against several lethal doses of the living organism. A purely bacteriolytic serum is of little use in protecting mice against infection. The results of the paper are similar to what has already been published on this subject.

W. J. P.

Drennan (Jennie G.). **A Non-Cholera Vibrio resembling the True Cholera Vibrio and a Pigment-forming Vibrio.**—*Jl. of Infectious Diseases.* 1914. Mar. Vol. 14. No. 2. pp. 251–254.

The two vibrios described were isolated at the quarantine station, New York in 1911.

The first one agreed with Koch's vibrio in its source (human faeces), morphology, staining reactions, motility, liquifying power on gelatine, aerobiosis, and in having only one flagellum. It gave, however, large moist slimy colonies on agar and only a slight cholera red reaction. It was not pathogenic to guinea-pigs and gave none of the serum reactions of cholera.

The second vibrio described gave large moist colonies on agar which gradually turned to a rich dark brown colour. The scum on alkaline peptone water was also similarly pigmented. The organism was a facultative anaerobe, liquified gelatine, slowly fermented glucose and saccharose but not lactose. It was slightly haemolytic and gave rise to a peculiar geranium odour on blood agar. It had one flagellum but produced no indol.

W. J. P.

Defressine & Cazeneuve (H.). **Vibrions cholériques et paracholériques. Vibrions des Moules des Parcs de Brégaillon.**—*Arch. de Méd. et Pharm. Navales.* 1914. Jan. Vol. 101. No. 1. pp. 46–55; and Feb. No. 2. pp. 103–119.

The paper deals chiefly with the paracholera vibrios found in mussels and other shell fish. Two terms are defined early in the paper.

"Paracholera vibrios" are those non-agglutinating vibrios coming from surroundings not tainted by actual cholera, while atypical cholera vibrios are those non-agglutinators which are isolated from a contaminated environment. This obviously is only a provisional arrangement.

The shell fish examined were collected 400 yards from the River Neuve, which had been shown to be contaminated with genuine cholera organisms. In 20 per cent. of the mussels examined a definite type of vibrio was found. These vibrios agreed with the Vibrio cholerae in morphology, type of movement, non-Gram staining, in liquifying gelatine, colony characters, complement fixation, fermentation properties and coagulation of milk (after 48 hours) with subsequent solution of the clot. The fermentation tests were carried out in a long series of sugars. These organisms were virulent for guinea-pigs and the pigs dead of the experimental infection showed the organism in the bile. The dead organisms were highly toxic to rabbits. The characters in which the organisms differed from the true cholera vibrio were :—1st. Inability to reduce nitrates to nitrites. 2nd. Marked haemolytic power. 3rd. Inability to agglutinate with a specific serum or to give the Pfeiffer reaction. The authors discuss two hypotheses: either these organisms are a specific mussel vibrio of paracholera character or they are atypical cholera vibrios. Naturally enough they have difficulty in coming to any definite conclusion.

The second part of the paper is a resumé of work recently done on the subject. Especial attention is given to a dictum of Crendiropoulo who examined samples of faeces of 34,461 passengers from infected countries with a view to the discovery of cholera carriers. After an examination of a large number of agglutinating and non-agglutinating vibrios derived from these and other sources he concluded: "Every carrier of vibrios, who comes from an infected or suspected country, ought to be treated as suspect, irrespective of whether the vibrio isolated agglutinates with a specific serum or not, and conversely every carrier of vibrios from an uncontaminated locality must be looked upon as harmless likewise, irrespective of whether the vibrio isolated agglutinates or not."

W. J. P.

Klimenko (W. N.). **Zum Befunde choleraähnlicher Vibrionen bei Kindern.** [Cholera-like Vibrios found in Children.]—*Centralbl. f. Bakt.* 1. Abt. Orig. 1914. Feb. 25. Vol. 73. No. 2. pp. 127–134.

In 1913 the author examined smears of the stool of a young female scarlet fever patient and found that 40–50 per cent. of all the organisms present were vibrios. Plated out on agar about half the colonies were composed of vibrios. Tested against cholera serum no specific agglutination resulted.

This vibrio was fully tested and agreed with the classical type in all morphological and cultural characters, but it was not virulent for either the guinea-pig or pigeon. The patient's serum taken on the 9th day of illness failed to agglutinate the strain. In the scarlet fever ward of the hospital several of the patients had slight diarrhoea at the time, so that it seemed advisable to examine a series (30) for the presence

of vibrios in the faeces. By the use of enriching methods and Dieudonné's agar three cases were shown to be excreting vibrios and these were found identical with the above described variety. Twenty-nine further samples of faeces from scarlet fever (19), diphtheria (8), and normal cases (2), were examined for vibrios and all showed them in the smears, but from none was it possible to isolate the strains.

The serum reactions of the above four strains were interesting. None agglutinated with a cholera serum. None produced a serum on injection which agglutinated each other to the full titre of the respective sera. Complement fixation showed that none of the sera of the patients from whom these strains were isolated contained specific antibodies to the strains.

The main point insisted upon in the paper is that a sample of faeces may show enormous numbers of vibrios and still this may be in no way related to cholera infection of the individual.

W. J. P.

Flu (P. C.). **Een Cholera-achtige Vibrio als verwekster van een Klinisch op Echte Asiatische Cholera gelijkend Ziekteproces?** [A Cholera-like Vibrio as the Cause of a Disease simulating Cholera.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1913. Vol. 53. No. 6. pp. 771–713.

A patient, in the beginning of an epidemic of cholera, was admitted to hospital with a cholera-like attack; she died in the algid stage of the disease. The motions were typical of cholera and on plating out on Dieudonné's agar a vibrio was obtained which was not the *V. cholerae*. A serum made by means of the vibrio did not bind complement with any of three cholera strains tested, but did with the strain used to make the serum. The strain did not agglutinate in 1/50 dilution of a cholera serum with a titre of 1/10,000. The haemolytic properties of the strain are described.

W. J. P.

Lamas (L.). **Estudio de Vibriones.** *Vibrio freseris* **nov. sp.** y *Vibrio vendrellensis* **nov. sp.**—*Boletin Instituto Nacional de Higiene de Alfonso XIII.* 1913. Dec. 31. Vol. 9. No. 36. pp. 173–210. With 1 coloured and 2 black and white plates.

In the spring of 1911 an epidemic of genuine cholera appeared in Spain. In the autumn of the same year a cholera-like disease appeared in the district surrounding Barcelona. From two of the cases two vibrios were isolated, while a third was isolated from a local river. The author compares these three organisms with each other and the *V. cholerae*.

The two organisms from patients were isolated in Vendrell and Gerona respectively. They showed close affinity with each other on agglutination and complement fixation tests being applied, while they appeared to be entirely different from the river vibrio and also the true cholera control strain.

The river vibrio had apparently no serological relationship with the cholera vibrio. The morphology and all biological characters are described in detail. W. J. P.

Gloster (T. H.). **Notes on Vibrios isolated from Various Sources in Bombay during the Recent Outbreak of Cholera.**—*Proc. Second All-India Sanitary Conference*, 1912. Vol. 3. pp. 252–264. 1913. Simla: Govt. Central Branch Press.

Vibrios obtained from actual cholera cases :—

1*st case*. Stool of 11th day of illness yielded a vibrio which did not agglutinate with a cholera serum in 1/50 dilution. The serum of this patient the 16th day after onset did not agglutinate his own vibrios in 1/10 dilution even, but did agglutinate an actual cholera strain in dilution 1/300.

2*nd case*. A non-agglutinating vibrio was obtained on the 8th and 11th days of illness. The patient's serum of the 11th day of illness did not agglutinate the vibrio isolated from her own stool.

3*rd and* 4*th cases* yielded vibrios which did not agglutinate with a specific serum in 1/50 dilution. The serum of the 3rd case never agglutinated the vibrio isolated from this case in higher dilution than 1/10. The serum of the 4th case on the 7th day of illness agglutinated the vibrio isolated from the case in a dilution of 1/20 but no higher.

From wells, one tank, sewage and a cockroach similar vibrios were isolated.

The cultural characteristics of all these strains are given and compared with the results obtained with agglutinating strains. On peptone water after 24 *hours* a scum occurred in the case of the non-agglutinators but not in the case of the agglutinators. The fermentation properties of the two groups showed no constant differences.

Repeated subculture on agar for three months did not definitely increase the agglutinating power of any of the non-agglutinating strains. The agglutinating strains all failed to haemolyse goats' blood, while the non-agglutinating strains had this power. Both varieties haemolysed human blood. Complement fixation tests of the two groups against a cholera serum showed the agglutinators to give a positive result while the non-agglutinators gave a negative result. The author concludes that, if we accept the variability of the agglutinating power of *V. cholerae* as a fact, still the haemolytic differences between the two groups suggest that the non-agglutinators are not really derived from true cholera vibrios.

W. J. P.

Ionesco-Mihaesti & Ciuca. i. **Sur une Race particulière de Vibrions cholériques.**—*Compt. Rend. Soc. Biol.* 1914. Feb. 27. Vol. 76. No. 7. pp. 310–312.

ii. **Sur Certains Caractères Biologiques du Vibrion Jamboli D.M. 310.**—*Ibid.* pp. 312–313.

i. This organism was at first a non-agglutinating vibrio but after six passages on agar it became agglutinating. In Pfeiffer's reaction many unlysed forms were still present in the peritoneum after two hours, in spite of the use of a large amount of the specific serum. The strain was strongly haemolytic to sheep's red cells. It produced an oxydase and a tyrosinase, which in tyrosin-containing solutions produced marked pigment formation.

ii. In the Bulgarian cholera epidemic the authors found three non-agglutinating strains out of 16. One of these three strains was a

pigment former and on that account it is fully described. The strain was obtained post mortem from the small intestine of a soldier. The case had been of a somewhat chronic type, death taking place on the sixth day of the disease, from uraemia. Smears from the intestine showed only long vibrionic forms.

The vibrio was isolated from the scum of a peptone water culture and its three first cultures would not agglutinate with the anti-cholera serum of the Pasteur Institute of Paris. Morphologically, this strain is peculiarly long, 10–12μ; it shows involution forms early and it possesses only one cilium. It is highly motile. It forms a scum on broth and alkaline peptone water in 8 to 10 hours at 37° C. and later a deposit falls. The colour of the culture changes from yellowish to reddish brown. The strain liquifies gelatine rapidly and this medium also takes on a brown colour. On agar it gives whitish colonies and gradually the medium becomes brown. If grown on peptone water covered with paraffin a thin pellicle forms between the peptone water and paraffin and after a few days the growth commences to mount up the tube; under these conditions however no pigment is found. Apparently the pigment formation requires a good air supply.

W. J. P.

Cantacuzene (J.) & Marie (A.). **Choléra gastro-intestinal expérimental chez le Cobaye.**—*Compt. Rend. Soc. Biol.* 1914. Feb. 27. Vol. 76. No. 7. pp. 307–310.

This paper contains evidence of the production by feeding of cholera in the guinea-pig. The animals were experimented on in groups of six. The group was first deprived of food for 24 hours. Then they all received a dose of soda bicarbonate and afterwards each of four received ·01 to ·02 of a gram of podophyllin and a third of an agar slope of cholera culture of 18 hours. The other two were used as contro'ls, one receiving the podophyllin alone and the other the agar culture. 83 per cent. of animals so treated with podopyllin + cholera culture died in from 7 to 48 hours, and the rest (17 per cent.) showed marked illness. Hypothermia was a marked clinical feature and frequent motions occurred, first bile stained. The motions swarmed with vibrios. Post mortem, congestion of the stomach, small intestine and caecum was found. The intestinal contents were blood-stained and watery, with rice grains. In the lower portion of the ileum small ecchymotic ulcers were present.

In 75 per cent. of the cases the urinary bladder was entirely empty. Those animals which survived about 40 hours showed marked congestion and enlargement of the suprarenals and kidneys. The latter showed haemorrhagic infarcts. Fatty changes were present in the liver. The lungs were flattened and shrivelled up as in human cholera. The vibrios were usually isolated from the intestine post mortem, but in only one case could they be grown from the heart blood or bile. If the animals had been 24 hours without food and bicarbonate of soda and vibrios only had been given without podophyllin, 12 per cent. died. If the animals had been having ordinary food, no deaths resulted.

These experiments are vitiated slightly by the fact that the dose of podophyllin given was high, up to ·02 gm., while the authors admit

·03 is toxic. Moreover two animals which received podophyllin alone had diarrhoea and died. These deaths are explained by the authors as cholera from contact infections.

W. J. P.

Prevention.

Harriss (S. A.). **The Effect of Pipe Water Supplies on the Reduction of Cholera in Urban Areas.**—*Proc. Second All-India Sanitary Conference.* 1912. Vol. 3. pp. 204-212. 1913. Simla: Govt. Central Branch Press.

A table is given showing the mortality from cholera in the towns of the United Provinces before and after the provision of a water supply. A three year period after the introduction of such a water supply appears to be necessary before the people take full advantage of it, very largely owing to the fact that pipe water in the hot season becomes very hot, quite frequently reaching a temperature of 98° F. The number of years in which cholera appeared in the different towns considered did not diminish, but the maximum mortality in any given year dropped enormously after the introduction of the supply. The death rate per thousand was in some cases never above one after the introduction of these supplies, and in other cases very rarely, while before it had been quite frequently above one. In endeavouring to explain why cholera has not entirely disappeared after the introduction of a water supply the following points are considered seriatim :—

(1) Other sources of water supply.
(2) The class of people inhabiting the town.
(3) Is the town a pilgrim centre ?
(4) Is the pipe supply continuous or intermittent ?
(5) Has the maximum mortality any relation to the prevalence of cholera in the district ?

In reference to the second of the above points a larger Hindu population is found not to increase the cholera death rate. In the case of Benares, a large pilgrim centre, the introduction of the water supply reduced the average death rate by more than one half, but its cholera death rate remained unduly high. The maximum mortality in the towns bears no definite relationship to the prevalence of cholera in the corresponding districts. The influence of wells is dealt with very fully, and it is suggested that the linking up of latrines and house drains with the sewers, where these are present in towns, is urgently required.

W. J. P.

Greig (E. D. W.). **Observations on Disinfection in Cholera.**—*Proc. Second All-India Sanitary Conference.* 1912. Vol. 3. pp. 200-203. 1913. Simla: Govt. Central Branch Press.

The report deals with the influence of thorough disinfection of the faeces in controlling two cholera epidemics. The first was a jail epidemic in Puri ; 17 cases occurred with five deaths. All latrines were kept filled with cyllin solution so that no fly infection was possible ; four days after this measure was taken no further cases occurred.

The second epidemic dealt with was that of the town of Puri itself. Chlorinated lime was the disinfectant used, as it is cheap and a good bactericide and its pungent odour keeps flies away. Its systematic use commenced on August 16th, and five days afterwards a very marked falling off of deaths occurred. A table of figures is given. The two experiences taken together suggest that this is a highly important part of the prophylaxis.

W. J. P.

Knapton (H. A. F.). **Some Practical Points in Dealing with Epidemics of Cholera.**—*Proc. Second All-India Sanitary Conference.* 1912. Vol. 3. pp. 214-219. 1913. Simla: Govt. Central Branch Press.

The author discusses the various methods of transmission of the disease from person to person. In the central division of the Bombay Presidency when cholera breaks out in a village, a form for particulars of each case is filled in by the village scribe and sent to the Sanitary authority from which conclusions as to the nature and origin of the case are drawn. Attention is drawn to the difficulty arising from epidemics of severe diarrhoea probably of a ptomaine poisoning character. One such epidemic occurred in a Deccan Village; 100 persons were affected with the disease but all recovered. Printed instructions are issued as to how to check the spread of cholera and an officer is required to see that these are carried out. The success of a scheme depends chiefly on the effectiveness of the supervising officer (Mamlatdar). An account of three small epidemics is given and the success of guarding the water supplies, burning the motions and the free use of disinfectants illustrated. All the officials touring cholera districts were required by the author to take dilute hydrochloric acid in their drinking water, 30 mins. to the oz., and none of them ever contracted the disease.

W. J. P.

Dunn (C. L.). **Proposed Measures for Dealing with Cholera Epidemics in the United Provinces.**—*Proc. Second All-India Sanitary Conference.* 1912. Vol. 3. pp. 220-234. 1913. Simla: Govt. Central Branch Press.

In 1910–1911 the epidemics of cholera in the United Provinces were severe and did not yield readily to preventive methods. This appears to have been due to former defective government regulations, which resulted usually in three weeks elapsing after the commencement of the epidemic before the wells were disinfected.

New official regulations as to procedure in times of epidemic are given as an appendix to the paper. The new regulations do not show anything unusual from the hygienic point of view. Experiments are given showing the results of endeavours to disinfect, by means of potassium permanganate, raw and sterile water, to which cholera germs have been added. From these it appears that one ounce of permanganate per 2,000 gallons of water is sufficient for the disinfection of ordinary wells.

W. J. P.

Bishop (T. H.). **The Working of the Cholera Prevention Scheme on the Lower Ganges Bridge Construction.** *Indian Jl. Med. Research.* 1913. Oct. Vol. 1. No. 2. pp. 294-309. With 1 map.

The scheme was planned to diminish the liability to cholera of the labourers working on the construction of a railway bridge over the Lower Ganges.

(a) *Preventive.* An educational campaign was carried on in each of the districts. House to house visits were paid and lectures given weekly in Bengali in schools and halls. All available information was collected likely to bear on the subject. A large amount of effort was expended in improving the village water supplies, effected usually by introducing deep tube wells. The difficulty of doing this, the cost of introduction and maintenance, and the value of the work are fully set forth and the distribution of the tube wells amongst the different villages is shown on a chart. The tube well was expensive in respect of upkeep, but this was due to ignorant and wilful damage. The wells varied from 18 to 128 feet deep and replaced the Pot wells common in Bengal, which though 20-30 feet deep have walls made of jointed rings of earthenware so that they are quite pervious. The disinfection of wells was carried out locally by chloride of lime according to a formula given in the paper. It succeeded in making the water so nasty that it was avoided by the people.

(b) *Curative.* In treatment hypertonic saline injections were largely used, but they were given into the peritoneal cavity, 80 ounces for an adult and 40 ounces for a child. The intravenous method was found difficult in the bad circumstances of the patients and subsequent comparison of the relative values of the two methods has resulted in favour of the intraperitoneal route (Campbell Medical Hospital, Calcutta). Parke Davis & Co.'s pituitary extract was given at the commencement of the cases, 20m every four hours. In 1913 of 38 cases treated none died.

W. J. P.

Pathology.

Ciaccia (Matteo). **Pathologisch-anatomische Beobachtungen über einige Fälle von Cholera asiatica.** [Observations on the Pathological Anatomy of Some Cases of Cholera.] *Centralbl. f. Bakt.* 1. Abt., Orig., 1914. Mar. 21. Vol. 73. No. 3. pp. 161–169.

The author examined 148 cases post-mortem and paid special attention to three characteristic post-mortem conditions, one of which has not been described before.

The first was the condition of the skin. The skin was found stiff and, on trying to pinch it up into folds, it gave the impression of being united to the underlying structure. The author speaks of this as the "skin sign." It has nothing to do with the fact that the skin stands in folds if pinched up during the disease. The post-mortem skin sign was got all over the body, but best in those areas where the skin normally is most easily raised into folds. It is not due to removal of fluid from the subcutaneous tissue. It occurs in cases in which the disease has been of very short duration, where no diarrhoea had occurred. It appears to depend on increased rigidity of the muscular and fibrous structures of the skin and subcutaneous tissues. The

sign enabled the author to determine that three cadavers believed to be those of cholera patients were nothing of the sort. This opinion was confirmed by the subsequent post-mortem and bacteriological examinations.

The other two conditions specially attended to were the peculiar focal fatty changes found in the liver, especially in the left lobe and near the falciform ligament, and the fatty changes found in the cortex of the kidneys. The two latter conditions are well known.

The author discusses various theories as to the nature of the intoxication and the bearing of the post-mortem findings on these.

W. J. P.

Michailow (Sergius). **Pathologisch- und anatomische Untersuchungen der feineren Struktur der Gehirnrinde, der Rinde des Kleinhirns, des verlängerten und des Ruckenmarks des Menschen bei asiatischer Cholera.** [Pathological Histology of the Cerebral Cortex, Cerebellar Cortex, Medulla and Spinal Cord in Cholera.]—*Arch. f. Psychiatrie u. Nervenkrankht.* 1913. Vol. 51. No. 2. pp. 587-687. With 8 plates.

In the central nervous system in early cholera, congestion of the blood vessels, swelling of their endothelium and hyaline degeneration of their walls occur. Small haemorrhages also supervene and pigmentary deposits may be left by them. By the end of the first week, leucocytes appear in the pericellular lymph spaces. From the third day of the disease the ependyma of the central canal of the cord proliferates. Changes in the neuroglia, in cholera, are not very certain or definite. From the third day of the disease scattered degeneration of nerve fibres in the nerve roots and cord appears. The degeneration depends on destruction of the nerve cells and also on direct action of the cholera toxin. The albuminous degeneration of nerve cells is most marked about the third day of the disease. Microorganisms are present round the degenerated nerve cells from a very early stage. The degeneration of nerve cells is shown by swelling, defective staining capacity and ultimate shrinking of the cells, etc. The vibrios are found frequently in the central nervous system. The paper is full of experimental detail and is worthy of close study.

W. J. P.

Millous. **Observations d' Entérite à Forme pseudo-cholérique avec Présence de Protozoaires.**—*Ann. d'Hyg. et Méd. Colon.* 1913. Oct.-Nov.-Dec. Vol. 16. No. 4. pp. 1174-1177.

Three cases of acute cholera-like attacks are described. They lasted a few days and none were fatal. Acute diarrhoea with mucus and blood in stools, vomiting, rigors, fall of temperature, quick thready pulse, sunken eyes and cold clammy sweats were the chief signs. The faeces in each case were examined and showed no vibrios in microscopic smears; they showed amoeba and in addition a small protozoon of elliptical form about 9–10μ long.

W. J. P.

Mendoza (A.). **Nota acerca del Cólera experimental en el Mono.** [Experimental Cholera in the Monkey.]—*Boletin del Instituto Nacional de Higiene de Alfonso XIII.* 1913. Sept. 30. Vol. 9. No. 35. pp. 117-130.

This short note simply recalls the fact that the author by the previous administration of alkalies was able to induce cholera with the specific vibrio when the latter was given to a monkey by the mouth. He published his work in 1886 and he suggests it has escaped the notice of recent workers.

W. J. P.

Canstatt (Laura & Tony). **Choleraerfahrungen und ärztliche Tätigkeit eines berühmten deutschen mediziners (Dr. Carl Canstatt) in Belgien.** [The Cholera Experiences and Professional Life of a Celebrated German Physician in Belgium, Prof. Dr. Carl Canstatt.] —*Janus.* 1914. Jan.–Feb. Vol. 19. pp. 1–16.

The subject of the article, Prof. Canstatt, lived in early life in Regensburg and at the time of the cholera epidemic of 1831 went to Paris to study the disease. When the epidemic diminished he journeyed to Brussels and shortly afterwards this town was severely attacked by cholera. He worked hard there for four months during which time he contracted a slight attack of the disease. The disease then spread into the country districts of Belgium and again Canstatt received an appointment to an infected centre, where he organised a hospital and remained there till the abatement of the epidemic. His treatment of cholera is rather interesting in so far as he recommended intravenous saline injections. The biography gives many interesting details of hospital arrangement and cholera treatment of the period.

W. J. P.

LEPROSY.

NETTER (Arnold). **Rapport relatif aux Mesures spéciales de Prophylaxie qu'il conviendrait de prendre dans la France continentale à l'Egard de la Lèpre, au Nom d'une Commission, composée de MM. Balzer, Blanchard, Gaucher, Hallopeau, Roux, Widal et Arnold Netter.**—*Bull. Acad. Méd. Paris.* Séance du 27 Jan. 3 ser. Vol. 71. (78e année) No. 4. pp. 98-125; et Séance du 3 Fev. No. 5. pp. 176-186. [Discussion.]

The Minister of the Interior having called upon the Academy of Medicine for its opinion upon the question of the compulsory notification of leprosy in France and for advice as to the measures necessary to prevent the spreading of that disease from infected persons, the subject was considered by a committee composed of MM. BALZER, BLANCHARD, GAUCHER, HALLOPEAU, ROUX, WIDAL, and Arnold NETTER.

At a meeting on Jan. 27, 1914, Dr. Netter communicated to the Academy the results of the deliberations of the committee, together with a report addressed to M. MIRMAN, Director of Public Health, on the prophylaxis of leprosy.

The committee considers that the Academy should avoid attempts to formulate the text of a law for the suppression of leprosy and should confine itself to indicating what it regards as the fundamental principles on which such a law should be based. The situation would appear to be as follows:—

In 1903, when the Council of Public Health and the Academy of Medicine were asked, under Article 4 of the Law of February 15, 1902, to draw up a list of compulsorily notifiable diseases, neither of these scientific bodies was in favour of including leprosy on the list. In more recent years, the number of sufferers from this disease actually resident in France has increased, and the question of special measures to prevent the infection of healthy persons has come to the front.

It is open to question whether an instrument legalising the compulsory notification and isolation of lepers does not exist in the Law of 1822 dealing with "*maladies pestilentielles*" since, though hitherto this law has been held to apply only to cholera, yellow fever, and plague, it may be maintained that leprosy is also a "pestilential disease" and capable of inclusion under this heading. There are many reasons, however, for preferring a special law for the suppression of leprosy if legislation is held to be necessary.

The deliberations of the Committee are arranged under the following headings:—(1) Present state of leprosy in France. (2) General question of contagion in leprosy and present opinions as to its methods of spread. (3) Contagiousness of leprosy in France. (4) Necessity of preventive measures against leprosy in Continental France. (5) Conditions which should be fulfilled by a law against leprosy. (6) Conclusions.

The report is what might be expected from Dr. Arnold Netter, a valuable and lucid examination of the whole question of leprosy in modern France. In the year 1225 there were no less than 2000 Leprosoriums in that country. With the remarkable diminution of the disease in Europe which marked the latter part of the Middle Ages (a diminution that is too readily attributed to successful isolation

and which still deserves careful examination by epidemiologists), these institutions became unnecessary and were converted to general hospital uses in 1693 by Louis XIV. Leprosy continued as a gradually diminishing quantity in Provence, Languedoc, Poitou, and Brittany up to recent times, but by the end of the nineteenth century the disease was confined to a single focus in a series of small villages situated in the mountains in the Department of Alpes-Maritimes. While this focus still persists and occasionally initiates a fresh case amongst persons intermarrying or having intimate relations with its inhabitants, by far the greater number of the lepers now in France are imported cases infected in endemic regions of the French Colonies or elsewhere, South America contributing a large number of persons who come to France for treatment. The possibility of transmission of leprosy from the infected to the healthy both in France and in the rest of Europe is demonstrated by the citation of several authenticated cases, most of them classic instances that are invariably quoted in this connection.

Of great interest are the cases arising in persons who had never left France and with whom it has been impossible to prove previous contact with a known case of leprosy. Of these, eight undoubted instances are on record, one from Paris, five from the Departments of the North and of Pas-de-Calais (Leloir), one from the Vosges (Bernheim) and one from Lorraine (Etienne).

[These cases are important since the prolonged and intimate contact, usually regarded as necessary in the transmission of leprosy, could hardly have occurred without having being discovered unless indeed they were infected by intimate contact with a "carrier" as opposed to a "case" of the disease. It is this possibility which lends a special importance to such instances.]

Lack of space forbids more than a summary of the conclusions of the committee, which, with the report, should be studied in the original by all interested in the subject. The main points are as follows:—

1. The contagion of leprosy is minimal in the absence of cohabitation and prolonged and intimate contact, provided that elementary measures of personal and general cleanliness are observed. It is therefore unnecessary to isolate in special institutions persons who are in a position to realise hygienic conditions in their own homes.

2. On the other hand, mendicants and vagabonds and all persons so situated as to be capable of disseminating the germs of the disease are to be regarded as "dangerous" and should be isolated in special institutions.

3. Entry to French territory should be forbidden to lepers of foreign nationality.

4. Persons suffering from leprosy in a form incapable of infecting others for the time being must be subject to medical inspection, must notify changes of address, and should be excluded from schools and from the exercise of certain occupations.

5. A similar medical inspection should be obligatory for persons who have lived in the same house with lepers.

6. Capable medical men familiar with the necessary technique must verify the diagnosis in all cases of leprosy notified to the authorities and must, further, indicate the measures to be taken and see that these are carried out.

The Discussion on Dr. Netter's report took place at the meeting of February 3, 1914. M. Gaucher pointed out that it was he who, in the face of great opposition by the Academy of Medicine, had raised the whole question of the need for fresh legislation against

leprosy. The discussion appears to have taken rather a personal turn, and adds very little to the case for or against the need for special measures in the suppression of the disease. On the motion of M. PINARD, the report was returned to the committee for further consideration and alterations, in view of new observations which were alleged to have been brought forward.

S. Lyle Cummins.

SCHMITTER (Ferdinand). **Leprosy in its Relation to Treponematous Disease.**—*Military Surgeon.* 1914. Apr. Vol. 34. No. 4. pp. 311-315.

This short but important communication records the systematic examination of 25 volunteers from amongst the lepers at the San Lazaro Hospital, Manila, to ascertain the proportion giving a positive Wassermann reaction.

The following examinations were carried out in each case—

(1) Examination for clinical signs of leprosy. (2) Search for leprosy organism. (3) Examination for suggestion of treponematous disease, syphilis or yaws. (4) Wassermann reaction. (5) Luetin reaction. (6) Antisyphilitic treatment. (7) Observation of results of treatment.

The results are tabulated in brief. The patients were male Filipinos except one Chinaman. In two the findings as to leprosy were doubtful, so the Wassermann reaction was applied in two other certain cases to complete the 25.

Findings.—Wassermann.		Luetin reaction.	
++	15 or 60 per cent.	++	3 or 12 per cent.
+	5 or 20 per cent.	+	12 or 48 per cent.
±	4 or 16 per cent.	±	7 or 28 per cent.
−	1 or 4 per cent.	−	3 or 12 per cent.

Combining the two reactions, evidence of treponema infection was found in 100 per cent. of 25 cases. Under treatment with salvarsan there were many instances of improvement though none of cure. The treatment could not be persisted in owing to the transfer of the patients to Culion Island.

[The author's deduction that leprosy is due to a combined infection with HANSEN'S bacillus and a treponema is not justified in view of the small number of cases examined. The percentage of Wassermann and Luetin reactions in an equivalent group of non-leprous male Filipinos of the same class would be of use in assessing the significance of the results. There are many reasons why male lepers might be expected to show a high incidence of syphilis, apart from the congenital taint so likely to prevail in the class from which the majority of lepers is drawn. The author has certainly made out a case for a thorough examination of lepers from this point of view.]

S. L. C.

LEBOEUF. **La Lèpre en Nouvelle-Calédonie et Dépendances.**—*Ann. d'Hyg. et Méd. Colon.* 1914. Jan.-Feb.-Mar. Vol. 17. No. 1. pp. 177-197.

The lepers in New Caledonia fall into certain categories on social

grounds, each class requiring its own conditions of isolation. Amongst the Europeans a fairly large number of cases arises, the larger proportion being from the convicts and ex-convicts of the penal settlement. The natives and coloured immigrants also suffer considerably from leprosy. Much of the article under review is occupied with local questions of administration arising out of the problem of isolation. In addition, there are some notes as to the researches made by the author, of which a summary is as follows :—

1. Rat leprosy occurs in New Caledonia. The bacillus is easily distinguished from HANSEN's bacillus and corresponds in every respect with the bacillus of STEFANSKY.

2. Careful examination of five persons living in contact with lepers has supported the opinion of MARCHOUX that acid fast bacilli can be found in the superficial lymphatic glands in man as in rats.

3. In endemic countries, there are probably many infected persons who are clinically healthy, only the markedly leprous persons appearing in the statistics.

4. Experiments with ticks, mosquitoes, bugs, and lice have all proved to be negative. *Musca domestica* can, however, absorb enormous numbers of lepra bacilli by feeding on ulcers, etc., these bacilli being voided in the faeces. It is only the open cases of leprosy that are dangerous in this way. With regard to the question of how far a fly can actually carry infected material, 23 flies captured in a house 150 metres distant from an Infirmary, where advanced lepers were under treatment, were none of them found to be infected. Dissemination by flies can therefore only occur within a very limited zone around the sick.

5. Much more discretion might be used in exempting from isolation certain cases of leprosy that are obviously not infective.

In a coloured population of 26,000 there are now 652 lepers. Amongst the Europeans 106 cases are from free persons, and 106 from amongst the convicts, the proportion, however, being much higher amongst the latter.

S. L. C.

LEBOEUF (A.) & SALOMON (E.). **La Lèpre en Nouvelle-Calédonie. i. Nombre et Distribution géographique des Lépreux. ii. Marche de la Maladie dans l'Archipel. iii. Organisation de la Prophylaxie.** —*Bull. Soc. Path. Exot.* 1914. Mar. Vol. 7. No. 3. pp. 218-232.

This article develops the theme introduced in the paper above quoted and adds considerably to the information furnished. The percentage of lepers in each tribe amongst the inhabitants of each island is tabulated. In a total native population of 28,000 there is a percentage of 2·6. In the foreign population, consisting chiefly of Europeans but with a few Arabs, Japanese and Tonkinese, there are 211 cases known amongst about 17,000 persons. The percentage of lepers amongst the penal element of the European community is twice that amongst the free inhabitants of the Colony, and it seems clear that the latter have been considerably infected by the former. In examining the numbers of natives infected in different regions since the introduction of the disease 60 years ago a very important fact comes to light, namely that in the regions, such as Oubatche, infected earliest, the disease has passed its maximum both of incidence and severity of type and is now diminishing, whereas in the more recently infected regions, such as the island of Ouvéa, the disease still keeps to its maximum of severity. [This observation,

so closely comparable with recent facts as to the distribution and type of tuberculosis in primitive and recently infected communities, is of such importance as to demand further investigation elsewhere.] In dealing with the question of preventive measures, the authors point out that any attempt to transfer native lepers to a central leprosorium would only lead to the flight and concealment of the sufferers. Isolation is therefore carried out as far as possible in "Isolation Villages," maintained partly by the tribes concerned and partly by the local Administration. Medical inspection, classification and statistics, search for lepers amongst the native tribes, and general measures of sanitation all receive attention. [If the work of PAUTRIER and MANTOUX on the diagnostic value of intradermal inoculations of leproline is confirmed, this method should be of great use in investigations in these and similar native communities, on lines similar to those used by tropical workers on tuberculosis with tuberculin.]

S. L. C.

MATHIS. **L'Helminthiase, le Goitre, la Lèpre dans la haute Région du Tonkin (Langson-Caobang).**—*Ann. d'Hyg. et Méd. Colon.* 1914. Jan.-Feb.-Mar. Vol. 17. No. 1. pp. 197-215.

The people most affected by leprosy in this region are the Thos and the Nongs, of whom the latter are the more subject to the disease. The total number of cases is not large—about 40 in a population of 80,000 (1 to 2,000). It is common for lepers from China to migrate into the district in order to evade the Chinese methods, which are drastic, and to undergo any treatment that may be possible at the Leper Settlement.

The latter is a village so situated as to be no danger to other villages. This segregation in a village where the lepers can cultivate the soil and live a more or less normal existance is a great advance on the methods of isolation of cases in crowded institutions and in close contact with each other. The settlement appears to be popular amongst the natives.

S. L. C.

MOREAU (Laurent). **A propos de la Prophylaxie de la Lèpre. Les Léproseries des îles Comores.**—*Bull. Soc. Path. Exot.* 1914. Feb. Vol. 7. No. 2. pp. 91-95. With 2 figs.

This short and terrible account of isolation in the leper-settlement of the Comoro Islands makes most painful reading. No single instance of individual suffering is quoted, but the bald statement of the facts is quite enough to awaken even the dullest imagination. At the time of Dr. Moreau's visit to the island of Djimadgini, the leprosorium for Mohéli, the population consisted of ten persons, five males and five females, an eleventh individual having just died. Their entire maintenance consisted of two packages (*balles*) of rice and some drinking water sent monthly from Mohéli. The one well on the island had recently dried up. Since there is no doctor even in Mohéli itself, these people are without any medical assistance. The conditions in the other islands are only slightly better than at Djimadgini. The author advises that native doctors from the medical school at Tananarive should be employed on leprosy work in these islands.

[The placing of a few advanced cases of leprosy on uninhabited islands, far from supervision and medical attendance, cannot be of much value in prophylaxis and involves unimaginable suffering to individuals. If isolation is necessary, it could surely be carried out in leper villages on the larger islands.] S. L. C.

Peiper (Otto). **Die Bekämpfung der Lepra in Deutsch-Ostafrika.*** [Anti-Leprosy Measures in German East Africa.]—*Lepra.* 1914. Feb. Vol. 14. No. 4. pp. 192-250. With 2 plates, 34 text figs., and 1 map.

The first 46 pages of this valuable Report deal with the history of the efforts to provide for the needs of lepers in German East Africa, and with the distribution of disease in the various Administrative Districts of the Protectorate. This portion of the work, while of high value to Administrators, does not lend itself to the uses of a summary and must be studied in the original. Under the heading of "treatment" the author briefly relates the effects of various therapeutic measures, summing up in favour of Nastin, which appears to have given excellent results where persisted in for a sufficient length of time. Although Lenz was unable to report any appreciable benefit with Nastin and Chaulmoogra oil at Bagamoyo (1905 and 1909), Neubert, working at New Langenberg, obtained encouraging results in a series of five cases and Peiper, at Kilwa, satisfied himself of the value of the remedy. In five cases, previously treated with large doses of sodium salicylate internally and daily rubbing with green soap, without any effect, subcutaneous and intramuscular injections of Nastin were tried, first as a two months' course lasting until October 14, then, after a pause, as recommended by Deycke, a further course lasting from the middle of November 1909 to January 1910. Nastin B1 and Nastin B2 being used. Three of the patients were given a further course from the end of January to the beginning of March 1910. Of these three, two appear to have been practically cured, so far as could be ascertained by inspection at intervals of several months after cessation of treatment. The third was not cured. All the patients seem to have improved. Expense forbids a wider trial of this preparation. The principles which should guide the organisation of further leper colonies in the Protectorate are discussed at some length, the author showing a thorough comprehension of the African negro and a practical sympathy with the leper whose disease condemns him to isolation in the interests of the community. His conclusions are as follows :—

"1. At present and in the near future, any attempt to root out leprosy by curative measures must fail owing to the protracted and costly nature of the treatment and the small staff of doctors available.

2. The only possible and practical form that an antileprosy campaign can take in German East Africa is the isolation of lepers, or in other words, their settlement in leper colonies.

3. In the isolation of lepers, a system of decentralisation (e.g. the provision of a large number of small leper colonies) is preferable to any attempt at centralisation (e.g. the institution of one large leper colony for a district)."

*An abridged form of the paper published as Beiheft 4 of the *Archiv f. Schiffs- u. Trop. Hyg.* 1913. May. Vol. 17.

The report is accompanied by some excellent photographs and plans showing the arrangement of the buildings in certain leper colonies throughout the Protectorate.

S. L. C.

Zambaco Pacha (Démétrius Al.). **La Lèpre à travers les Siècles et les Contrées.**—xii + 845 pp. Paris: Masson & Cie. [12 frs.]

This work is reviewed on page 508.

Clinical.

Williams (A. Winkelried). **Case of Nodular Leprosy.**—*Proc. Roy. Soc. Med.* 1914. Apr. Vol. 7. No. 6 (Dermatological Section). p. 170.

This is a report on a case of leprosy in an ex-soldier born in India, who later served in that country and in South Africa. The disease appears to have remained undiagnosed during the patient's army service, a blow on the knee received at football, which resulted in a chronic ulcer, being regarded as the principal lesion. He now presents the typical facies, and clumps of lepra bacilli are to be found in the nasal discharge. Anaesthesia more or less marked can be elicited in the upper and lower limbs.

S. L. C.

Pautrier (L. M.). **Le Diagnostic de la Lèpre par les Méthodes de Laboratoire.**—*Presse Méd.* 1914. Mar. 14. No. 21. pp. 203–204.

After pointing out that the diagnosis of leprosy is becoming of increasing importance in view of the rather large number of lepers returning to France from the colonies or resident in the country, Dr. Pautrier summarises the steps to be taken under three headings, Biopsy, Bacteriological examination of the nasal mucous membrane, and the intradermal injection of Leproline. A clear description of the technique for removing a portion of infected tissue and for staining and examining it is given under the first heading. In the examination of the nasal mucous membrane, where the usual nasal catarrh is absent, the author recommends the administration of potassium iodide in doses sufficient to cause a nasal discharge, in which the bacilli may often be demonstrated. The presence of an acid-fast bacillus, that of Karlinski, in the nasal mucous membrane is not uncommon in non-leprous persons and may give rise to errors. It is distinguished by its growing easily in ordinary media and being pathogenic to guinea pigs. The intradermal injection of 1/20 c.c. of Rost's leproline (previously autoclaved for 20 minutes at 120°C.) has been found by the author and Mantoux to lead to a characteristic reaction in lepers, a little nodule forming at the site of injection, increasing from the third day onwards to the size of a sixpence and having a little dark point or scab in the centre. The scab detaches itself on about the fifteenth day. In normal persons, nothing beyond a transitory erythema follows the injection.

S. L. C.

Davies (T. S.). **Further Notes on the Specific Treatment of Leprosy by a Cultural Extract.**—*S. African Med. Rec.* 1914. Mar. 14. Vol. 12. No. 5. pp. 77–78.

A cultural extract prepared by Dr. Bayon and injected at intervals of about five days has, in the hands of the author, given promising results which he summarises as follows :—

" By treating seven lepers with a cultural extract, a remarkable improvement was brought about in two, marked improvement became noticeable in three, and slight improvement took place in the remaining two." . . . . " All cases belonged to the macular and maculo-anaesthetic type. One had incipient nodules."

S. L. C.

Honeij (James A.) i. **Leprosy. Some Notes on Symptoms.**—*Boston Med. & Surg. Jl.* 1914. Jan. 15. Vol. 170. No. 3. pp. 85–87. ii. **Leprosy. The Pulse as a possible Indicator of the Progress of the Disease. (A Preliminary Note.)**—*Ibid.* Feb. 12. No. 7. pp. 233–235. With 8 charts.

i. The author considers that, while the bacteriology and pathology of leprosy have been thoroughly studied, " the many clinical aspects presented have not been emphasized." The paper is designed to call attention to the amount of information to be derived from a close clinical study of cases. It is worth noting that, in fifteen cases, all except one (an anaesthetic case) showed lesions of the nasal mucous membrane on careful examination.

ii. In contrast to the usual evening rise of pulse rate, temperature and respiration, Dr. Honeij calls attention to a morning rise, of the pulse rate at least, in certain cases of leprosy. It would seem that this curious phenomenon occurs " in the majority of cases, and especially in those patients who are in an advanced active stage of the disease. The condition is present during febrile disturbances." In one case at least, the symptoms disappeared as the patient's condition improved. The author suggests that this morning acceleration of the pulse may prove to be a useful prognostic sign. [This new and interesting observation is the first-fruits of the careful clinical study of leprosy which is being carried out by the author at the Penikese Island Hospital, and further notes on the subject will be awaited with interest.]

S. L. C.

Terra (F.). **Um Caso de Lepra de Forma Achromica.**—*Boletim da Sociedade Brasiliera de Dermatologia.* 1913. Anno 2. No. 1. p. 19 and p. 35.

In a negress aged 13 years, the daughter of a leprous father, who himself had suffered from leprosy for the last five years, a white patch appeared on the right malar region followed by others on the arms, buttocks, ears, and left leg. The patches, which closely resembled vitiligo (leucoderma), were distinguished from the latter by their marked asymmetry and by the fact that, although sensibility to touch was preserved, sensibility to sensations of pain and heat was diminished. The diagnosis was confirmed by bacteriological findings from the nasal

mucous membrane. The case is of interest, as leprosy and leucoderma are often confused, especially by the lay population in tropical countries.

S. L. C.

Colombier (P.). **Lésions osseuses précoces dans la Lèpre constatées par la Radiographie.**—*Bull. Soc. Path. Exot.* 1914. Jan. Vol. 7. No. 1. pp. 2–3. With 1 plate.

By means of radiography Dr. Colombier has been able to note bone lesions at a time when, as yet, clinical evidence afforded no indication of their presence.

The plate published with the paper shows very clearly a narrowing and pointing of several of the terminal phalanges in both feet. In another case, a similar change was demonstrated in the left foot and in the nasal bones. Similar observations by T. Miller (see this *Bulletin*, Vol. 2, p. 286) are quoted as the only previous notice of the application of radiography to the study of leprosy.

S. L. C.

Bacteriology.

Thomson (David). **Attempts to find Disease Germs in the European Bed Bug (*Cimex lectularius*) after Feeding Experiments in various Diseases: Leprosy, Lymphadenoma, Carcinoma, etc.**—*Ann. Trop. Med. & Parasit.* 1914. Apr. 21. Vol. 8. No. 1. pp. 19-28.

In the course of a research on some of the obscure diseases of temperate climates, carried out with special reference to possible phases of the causative agents in the bodies of blood-sucking insects, D. Thomson fed bed-bugs (both *Cimex lectularius* and *C. rotundatus*) on a series of lepers. The bed-bugs were killed and examined for acid-fast bacilli at periods varying from one to fifteen days after the feeding. No acid-fast bacilli were found in 105 bed-bugs fed on lepers, nor in 35 caught on the bed mattresses of leper patients.

S. L. C.

Rost (E. R.). **On the Leprosy Bacillus and Allied Bacilli.**—*Trans. xvii Intern. Congress of Med.* London, 1913. Sect. iv. Bacteriology & Immunity. Pt. 2. pp. 111-118.

Major Rost believes that the remarkably beneficial effects observed by him on using "leprolin" in a series of cases prove that his streptothrix, from which the leprolin is prepared, is the cause of leprosy. To obtain cultures, he uses a medium prepared from Lemco broth, milk and the distillate from the condensation of steam passed over fish. "This medium is inoculated with the blister fluid of lepers, preferably spontaneous blisters, or the juice expressed from nodules which do not bleed." The vaccine (leprolin) is made from six-week broth cultures of mixed streptothrix, that s to say from a mixture of several different strains isolated from lepers, the culture being filtered through blotting-paper after agitation and the filtrate sterilised.

Intramuscular injections are given once a week, 1·5 to 3 c.c. for anaesthetic cases, 1 c.c. for nodular ones. "Fish and milk should be excluded from the diet, and fairly large doses of sodium chloride taken daily. Salt water baths and the application of erythema-causing ointments to the nodular patches just after the injections of vaccine, in order to cause a better blood-supply, are advantageous. An ointment composed of sodium chloride and vaseline should also be rubbed into the affected areas." The results of treatment in 22 cases are analysed. Of these, seven were "cured, apparently cured, or almost cured" and seven greatly improved. Major Rost calls especial attention to the danger of infected clothing, and warns residents in endemic areas against the possibility of infection of garments when washed by natives. He claims to have cultivated the germ of leprosy from the clothing of lepers.

[It is rash to assume that the efficiency of an organism in vaccine therapy necessarily proves that organism to be the cause of leprosy. It might be claimed, on the same ground, that other cultures, differing from that of Rost, were equally the cause of the disease. Again, there must inevitably be some doubt as to the significance of cultures obtained from blister-fluid, from material expressed from nodules, and even from the clothing of lepers, in view of the negative results obtained by Fraser and Fletcher from material obtained with elaborate precautions from the interior of non-ulcerating nodules.]

S. L. C.

Duval (Charles). **Pertinent Remarks upon the Cultivation of the Leprosy Bacillus.**—*Trans. xvii Intern. Congress of Med.* London, 1913. Sect. iv. Bacteriology & Immunity. Pt. 2. pp. 103-109.

Having in view the diversity of opinion as to the culture of Hansen's bacillus, Duval has carefully investigated a series of uncontaminated nodules to obtain material for comparison with other organisms regarded as leprosy bacilli. His results indicate "(1) That many of the cultures grown from leprous lesions and regarded as the cause of the disease are varieties of one or more species and probably have no etiological relation with leprosy. (2) That the specific organism of Hansen, *in vitro*, is an acid-fast rod (schizomycete) analogous to the tubercle organism, and its initial cultivation outside the host is accomplished with a medium containing the dissociate products of animal protein." The multiplication of Hansen's bacillus in the portions of tissue used for culture, the value of the amino-acids in favouring a growth, and the presence of the germ inside cells which, apart from mechanical distension, appear but little affected by its presence, all suggest that the organism assimilates, within the cell, the end-products of tryptic digestion, being unable of itself to attack and break down the whole protein molecule. "Failure to recognise that the leprosy organism is unable to attack the whole protein, and that it requires the amino-acids for assimilation, explains why mixed cultures which at first contained the Hansen's rods subsequently resulted in a pure growth of the associated species." Of the two strains isolated by Duval, one, a free-growing chromogenic bacillus and the other, a non-chromogenic organism growing slowly and only upon a split protein medium, the latter would appear to be a separate species,

and, according to the author, is the true leprosy bacillus. The most convenient method of culture is to transfer bits of the leprous nodule to slanted 1 per cent. alkaline agar and seed with a proteolytic non-spore-bearing bacterium which is designed to digest the protein and enable the lepra bacillus to multiply. The hydrolysing organism is later got rid of by heating to 60° C. for half-an-hour, which does not kill the bacillus of Hansen. " The specific organism of human leprosy is undoubtedly a schizomycete, genus bacillus, and not a trichomycete, genus streptothrix, any more so than the tubercle bacillus."

[The above quoted paper is not consistent with the report of the proceedings of the xvii International Congress of Medicine published in the *British Medical Journal* of August 23, 1913, p. 468 (see also this *Bulletin*, Vol. 2, p. 534). A final statement of Dr. Duval's views will be awaited with interest.]

S. L. C.

Wolbach (S. B.) & Honeij (James A.). **The Diphtheroid Bacillus from Leprosy Lesions.**—*Jl. of Med. Research.* 1914. Mar. Vol. 30. No. 1. (New Ser. Vol. 25). Whole No. 143. pp. 1–8. With 2 plates.

In describing a diphtheroid bacillus isolated from a leprous lesion, the authors point out that " the data for the absolute identification of diphtheroids are not sufficient " and accordingly give a very full account of their culture in the hope of establishing a better standard for the future descriptions of such organisms. The material was an epitrochlear lymph node obtained with elaborate aseptic precautions from a case of the tubercular type of leprosy known to have suffered from the disease during 16 years. The following media were inoculated :— Ascitic fluid dextrose agar, ascitic fluid agar, ascitic fluid glycerin agar, Ficker's brain agar, Dorsett's egg medium, glycerin agar and placental agar. Two sets of tubes, one for incubation aerobically, and one for anaerobic culture, were put up in each case. The material was proved by staining to be rich in lepra bacilli. Two guinea-pigs inoculated with the tissue were apparently quite free from disease nine months later. After ten days culture, growth was seen in a single aerobic tube of ascitic fluid dextrose agar in the form of a translucent whitish band around the piece of gland tissue. After several months of culture the bacillus grew readily on broth with or without glycerine, plain agar, dextrose agar and glycerine agar. The bacillus is extremely pleomorphic, a typical diphtheroid in its general characteristics, and remarkable from the fact that all cultures show the presence of acid-resistant granules and segments. There are also non-acid-fast coccoid forms as well as slender paired bacilli closely resembling the diphtheria bacillus. Involution forms appear after a few days' culture. The bacilli are strongly Gram-positive, stain, though not with great facility, with the ordinary aniline dyes, and,as stated above, resist acids in certain cases, the acid solutions used being dilute and not applied for very long (as 3 per cent. sulphuric acid in 95 per cent. alcohol for 30 seconds). The colonies on agar media appear in 48 hours, being at first clear and afterwards rather dry and growing by the production of fresh colonies at the edge. In dextrose, maltose and glycerine, acid in considerable quantity is produced. The organism

showed no pathogenicity for Japanese waltzing mice, guinea-pigs, rabbits and white rats. For a full description, the original article should be consulted.

[As pointed out by the authors, the frequency with which diphtheroid organisms comparable to that above described have been isolated from cases of leprosy makes it of great importance that workers should invariably study and record all such finds. It is to be hoped that the careful description now under review will serve as a model to all who publish accounts of such organisms.]

S. L. C.

Woolley (Paul G.). **Cultivation of the Bacillus of Leprosy: A Review.**—*Amer. Jl. Trop. Dis. & Prevent. Med.* 1914. Feb. Vol. 1. No. 8. pp. 580–583.

This is a brief review of the various attempts to cultivate the leprosy bacillus, the author concluding that "each investigator believes he has cultivated the cause of leprosy, and . . . . none of them have proved it, and further that a deal of work remains to be done." No new light is thrown upon the subject, but the review will commend itself to those in need of a concise account of recent work in the direction of attempts to cultivate the leprosy bacillus, more especially as it gives references to all papers of first-rate importance on the subject.

S. L. C.

Federated Malay States. **Twelfth Annual Report of the Institute for Medical Research, Kuala Lumpur, Federated Malay States, 1912.** [Fraser (H.) M.D., Director.] 1913. Kuala Lumpur: Printed at F.M.S. Government Printing Office. [Leprosy pp. 16–26.]

The greater part of the work on Leprosy dealt with in this report has already been reviewed (see this *Bulletin*, Vol. 2, 1913, pp. 502 and 503) and it is therefore unnecessary to do more than quote a sentence which sums up the negative result of many careful attempts to cultivate Hansen's bacillus on the various media claimed as successful for this purpose. "Twenty-four patients have been dealt with and 246 inoculations made on various culture media. In no single instance has a culture of the leprosy bacillus been obtained."

S. L. C.

Federated Malay States. **Report from the Institute for Medical Research, Kuala Lumpur, for the Period 1st April to 30th September, 1913.** [Fraser (H.), Director.]—Report to the Advisory Committee for the Tropical Diseases Research Fund. Received in Colonial Office Jan. 24, 1914. [(Proof) Leprosy pp. 5–14.]

In continuation of their previous work on this subject (see this *Bulletin*, Vol. 2, pp. 502–503), Fraser and Fletcher have carried out further experiments with a view to ascertaining whether the *Bacillus leprae* can or cannot be cultivated. In the new series, an important advance in technique has made it possible to dispense with the use of iodine as a disinfectant, the leprous tissue being now removed

after the raising of a skin flap, without the application of any antiseptic. In a large series of attempts at culture on serum-agar, serum mixed with sterile agar, and English proof-agar, only negative results were obtained. The most important addition to the previous report is a comprehensive investigation of the results to be obtained on Clegg's medium, the leprous material being added after the establishment of cultures of amoebae (from a water-tank) and cholera vibrios. Tissue rich in bacilli was obtained from each of two cases (Nos. 37 and 38), five tubes being, in each case, inoculated with (a) nodular material and (b) an emulsion of the leprous tissue, thus making a total of 20 tubes. In one tube inoculated with emulsion from Case 37 a portion of nodular material was included. In subcultures, the nodules were removed to fresh tubes along with a loopful of the amoebae-cholera culture but, where emulsions had been used, subculture was effected by the transfer of a loopful of the mixture only. It is therefore evident that, in the case of the nodule-cultures, all the leprous tissue was carried over to the fresh tubes, while in the case of the emulsions, a considerable dilution of leprous material was effected at each transfer. The results are shown in the following table.

		2nd Sub-culture.	3rd Sub-culture.	4th Sub-culture.	5th Sub-culture.	6th Sub-culture.	
Case No. 37 Nodules of leper tissue.	1	+	+	+	+	+ +	
	2	+	+	+	+	+ +	
	3	+	+	+	+	+	
	4	+	+	+	+	+	
	5	+	+	+	+	+	
Case No. 37 Emulsion of leper tissue.	1	—	—	—	—	—	
	2	+ +	+	+	+	+	On these tubes (2) there was a nodule of leper tissue.
	3	—	—	—	—	—	
	4	—	—	—	—	—	
	5	—	—	—	—	—	
Case No. 38 Nodules of leper tissue.	1	+	+	+	+	+	
	1	+	+	+	+	+	
	2	+	+	+	+	+	
	3	+	+	+	+	+	
	4	+	+	+	+	+	
	5	+	+	+	+	+	
Case No. 38 Emulsion of leper tissue.	1	—	—	—	—	—	
	2	+	—	—	—	—	
	3	—	—	—	—	—	
	4	—	—	—	—	—	
	5	—	—	—	—	—	

It will be seen at a glance that, in the nodule-culture tubes, where there had been a carrying over of the infected tissue, acid-fast bacilli could still be found in all the subcultures, whereas in the tubes containing emulsion, and therefore subject to increasing dilution of the lepra bacilli present, in no case were acid-fast rods found after the second subculture except in the solitary instance where a portion of nodular substance had been introduced with the emulsion and carried

on in the successive tubes. After the sixth subculture, the tubes in which lepra bacilli had persisted were subjected to heat for half an hour at 60°C., as in CLEGG'S original method, and further subcultures then made. No growth of acid-fast bacilli could be demonstrated in these preparations.

The above experiment shows clearly that there was persistence but not proliferation of the bacilli. On the assumption that, as lepra bacilli multiply in living tissue, it might be possible to obtain a culture in leprous tissue grown *in vitro* by CARREL'S method, an interesting experiment was carried out with material obtained from a case of nodular leprosy (Case 39), but without any success as regards the cultivation of lepra bacilli up to the time of writing. The report of this experiment (which is still in progress) does not make it clear whether the authors were satisfied that a growth of tissue had actually taken place. As this point is vital in any attempt to draw conclusions, judgment must be suspended until further information is forthcoming. The report concludes with a series of 39 experiments on animals in which, up to the date of writing, no success had attended efforts to obtain a growth of lepra bacilli in the tissues of rabbits, guinea-pigs, rats and a gibbon, after the introduction of leprous material. In view of the divergence of their results from those of other workers, the authors suggest that steps might be taken by the Tropical Diseases Research Committee to organise an international commission composed of the various investigators who have worked at the disease.

S. L. C.

BAYON (H.). **The Micro-Organism of Leprosy: Has it been cultivated?** —*Lepra.* 1914. Feb. Vol. 14. No. 4. pp. 187-191. With 4 coloured plates.

In this paper, Bayon deals critically with the opinions expressed by FRASER and FLETCHER (See this *Bulletin*, Vol. 2, pp. 502–503) as to the significance of the Kedrowsky diphtheroid in the causation of leprosy. To the assertion that it is misleading to "describe germs as acid-resisting because they retain the carbol-fuchsine after momentary immersion in weak acid," Bayon replies that the power to resist the action of acids is relative and that certain bacteria of a diphtheroid type resist decolourisation by 1 per cent. of sulphuric acid, while most cocci and bacilli do not. In view of this fact, it cannot be called misleading to cite this character in their recognition.

He fully admits the difficulty of cultivating Hansen's "bacillus" or of infecting laboratory animals with it; (for instance, he himself obtained only two infected animals out of three series of from 20 to 25 mice and rats injected with leprous cultures); and finds, in the work of FLETCHER and FRASER, confirmation of his own view that the acid-fast stage of Hansen's "bacillus" is difficult or impossible to isolate in culture. He thinks that the authors should have paid greater attention to the diphtheroids isolated by them in their attempts at culture from leprous tissue, and claims that it is still open to question whether these latter organisms were contaminations, as assumed, or acid-labile stages of Hansen's "bacillus." Bayon claims that the

lesions following the injection of the Kedrowsky organism in rats are comparable with the lesions in human leprosy. A series of very beautiful coloured plates serves to illustrate the points raised in the paper.

S. L. C.

Fraser (H.) & Fletcher (W.). **The Dependence of Leprosy on Fish-eating.** [Correspondence.]—*Lancet.* 1914. Feb. 21. p. 573.

Attention is called to the fact that, in his experiments on cold-blooded animals, quoted in the *Lancet* of December 13, 1913, Couret* employed Duval's cultures. Since these cultures have now been acknowledged by Duval himself to be other than the lepra bacillus, Couret's experiments, with the exception of two carried out on gold fish with leprous tissue, lose their value as bearing on the question of leprosy. In the two exceptions mentioned the possibility of fallacies is so great that no value can be attached to them.

S. L. C.

Marchoux (E.). **La Lèpre des Rats.**—*Presse Méd.* 1914. Mar. 14. No. 21. pp. 201-203.

Regarding efforts to cultivate Hansen's bacillus and attempts to transfer it by inoculation as hitherto unsuccessful, M. Marchoux has applied himself to the study of the bacillus of Stephansky, in hopes that the investigation of this allied germ may throw light upon the many unsolved problems of human leprosy. Rat-leprosy manifests itself in two forms, a glandular and a musculo-cutaneous, presenting histological features strictly comparable to those of man. An important point of distinction is the facility with which rat-leprosy is transmitted by inoculation, even when very small amounts of germ-containing tissue are introduced under the skin. Mice and guinea-pigs, the latter only exceptionally, are capable of being infected. Rabbits, monkeys and other animals are refractory. Although the bacilli multiply in fragments of tissue placed on nutrient substrata, the multiplication is confined to the tissue and stops short of the culture medium. Attempts to transmit the disease by fleas and lice have given negative results, nor can these insects be shown to contain the bacilli after feeding on infected animals. Acid-fast bacilli closely resembling those of rat-leprosy are to be found in *Laelaps echidninus*, but can be separated from the leprosy bacillus by inoculation experiments. *Sarcoptes* and *Demodex* may both play a role in producing skin-lesions through which the bacilli may penetrate, while house-flies are a real source of danger, since Marchoux was able to infect clean rats by allowing flies to pitch on raw surfaces after having fed on infected sores. The most usual mode of transmission amongst rats would seem to be by biting, an interesting case of this being recorded. The average infection tends to be mild and to go on to recovery. To obtain severe attacks, it is necessary to inoculate pyogenic germs, preferably staphylococci, at the same time as those of rat-leprosy. As many of the points

*Couret (Maurice). The Behaviour of *Bacillus leprae* in Cold-blooded Animals.—*Jl. Experimental Med.* 1911. Vol. 13. pp. 576-589.

demonstrated have a definite bearing on the human disease, the author's conclusions must be quoted in full.

1. The specific bacillus is not a resistant germ.
2. It is easily inoculated into susceptible animals.
3. Biting insects do not transmit the disease.
4. *Sarcoptes, Demodex,* and flies play an ancillary role in transmission.
5. Germs are easily introduced through the skin on contact with infected individuals.
6. The intact preputial mucous membrane will allow the germ to pass through.
7. Clinically recognisable rat-leprosy is rare in comparison to the mild and latent type.
8. Atypical infections may remain undiagnosed till death.
9. The disease may recover spontaneously.
10. It becomes recognisable as rat-leprosy where secondary infections coexist.
11. The hygienic measures applicable against tubercle will serve against leprosy also.
12. Prevention must be directed to the exclusion from the skin of all chance of contamination by specific bacilli.

S. L. C.

Book Reviews.

Rogers (Leonard). **Dysenteries. Their Differentiation and Treatment.**—xi + 336 pp. With 10 plates, 2 charts and 3 diagrams. 1913. London: Henry Frowde & Hodder & Stoughton. [Price 10/6 net.]

When an author, possessing unrivalled opportunities for the study of the various forms of such a disease as dysentery, publishes a book with the title of "Dysenteries," the reader naturally hopes that he will find a complete account of this subject. Let us examine this work and ascertain if the reader's hopes are realised.

After touching on the history of the knowledge of the various forms of dysentery, especially the differentiation of the amoebic from the bacillary form of the disease, the author discusses "the epidemiology of dysenteries," in such a way as to force the reader to conclude that the author has no views outside of India and that in reality this chapter consists of an account of the seasonal incidence of dysentery in India.

The next chapter concerns the entamoebae, their life history and their differentiation and, considering that the author is a professor of pathology, the reader looks confidently for a good account of this difficult subject; but he looks in vain, and to heighten his disappointment is a plate showing drawings of stained and unstained *E. histolytica*, which in execution might well be compared to the daubs of the nursery.

Chapter IV is a welcome change, as here the reader has a very good and clear account of the pathological anatomy of amoebic dysentery, especially the naked-eye lesions, and further it is adorned with three beautiful coloured plates showing the macroscopic lesions found in the different stages of the disease.

Chapter V deals with the clinical aspects of amoebic dysentery and of this the author gives a clear and concise account.

Chapter VI concerns the treatment of dysenteric symptoms caused by amoebae. Ipecacuanha and emetine salts are alone discussed. Bismuth subnitrate in large doses is not even mentioned and, as in the author's early papers on this subject, Vedder's work receives but scanty recognition; it would be well if it were more generally realised that to follow the dictum "Render unto Caesar the things that are Caesar's" is, in all branches of science, not only a graceful but a necessary act.

The next 108 pages deal with the "remote complications of amoebic dysentery," and are almost entirely concerned with liver abscess; of this condition the author gives a good description, especially of the symptoms, signs and treatment.

Chapters VIII, IX, X, and XI are on bacillary dysentery. Dealing first with the bacteria causing dysentery, the author gives a very poor, confusing and often misleading account of these organisms and the methods of their differentiation.

For instance, in the account of the fermentation of the various sugars by the different strains of the dysentery bacilli some organisms are stated to produce acid in *glucose* but not in *dextrose*! and a table of sugar reactions is given, which differs from any that have hitherto been published.

The methods of differentiation of these bacilli by agglutination with immune sera and complement fixation are given in a few short paragraphs, as if in the carrying out of these tests there were few difficulties or errors into which an unwary worker might stumble.

As in amoebic dysentery, so in bacillary dysentery the author gives the reader a very good account of the pathological anatomy, and again illustrates his remarks with a beautifully executed coloured plate. The symptoms and treatment are adequately dealt with.

The next chapter, which deals with forms of dysentery other than amoebic and bacillary, is of a very incomplete and sketchy character.

Finally, the author devotes a chapter to hill diarrhoea and sprue, and gives the ordinary text book account of these diseases with a few unimportant statistical tables that were forced upon him during the observation of some fifty cases.

From the above criticisms it is clear that the reader's hopes for a complete account of the various forms of dysentery have not been fulfilled, but he has instead been regaled largely with remarks, varying in merit, on amoebic and bacillary dysentery, the result of the author's experience and work in India.

Lastly, a word concerning the author's style. One might almost think that he had reached the Nirvana of the Buddhist, but surely by a different route, which state is described in the words of the poet, "Foregoing self, the universe grows 'I'!"

S. R. Douglas.

ZAMBACO PACHA (Démétrius Al.). [de Bysance.] **La Lèpre à traverse les Siècles et les Contrées.**—xii + 845 pp. 8vo. 1914. Paris: Masson & Cie. [Price 12 fr.].

This volume is the last of many contributions made by its distinguished author to the literature of leprosy and it marks the last chapter of a life devoted to the study of the disease. It is impossible to read it without a tribute to the energy and courage that could carry through such a work at the end of a long life. A large part of the book is devoted to a historical consideration of leprosy in different countries, and forms an important contribution to medical archaeology as well as to the study of leprosy. This historical survey leads up to the promulgation of the author's well-known views on the hereditary nature of the disease, and an attack upon the theory of "contact" as a factor in its dissemination. It is far easier to assail the theory of contact than to uphold that of heredity and, in the latter endeavour, the author requires all his eloquence and conviction to maintain the argument. In order to explain away the celebrated observations of HANSEN on the freedom from leprosy of the descendants of Norwegian emigrants settled in America, he is obliged to assume a type of heredity that only reveals itself under circumstances unfavourable to the individual. "C'est là l'hérédité en énergétique qui ne fera explosion dans la descendance que dans le cas où les conditions extérieures la favoriseront." But the external conditions quoted as favouring the outbreak of a hereditary taint are just those likely to bring about "contact" infection. Diseases that are indisputably hereditary, such as haemophilia, do not require poverty and overcrowding to evoke them in the persons affected. Heredity may be held responsible for the transmission of diseases depending on a somatic defect, but in leprosy we have to do with a parasitic infection, a very different thing. Even supposing that a child may sometimes be born infected with leprosy, this does not settle the question of the hereditary transmission of acquired characters. To quote from HANSEN and LOOFT, ("Leprosy" 1895) "were BAUMGARTEN'S hypothesis correct, it should certainly be called a hypothesis of latent infection and not a hypothesis of heredity." In attacking the theory of contact infection, Zambaco Pacha directs most of his energy against a position that is no longer occupied by the enemy. It is no longer seriously maintained that occasional or transitory contact with lepers is dangerous. If "contact" is responsible, it must be close, intimate and prolonged. Many of the arguments employed against "contact" are two-edged, as the following:—"Colonists and soldiers returning to France infected with leprosy after long residence in endemic localities live with their families without any precautions and yet infect no one." But how did these colonists and soldiers get infected? Are we to believe that the disease had been latent in their stock from the Middle Ages and only developed on their proceeding to the Colonies, or is it not more probable that the long residence in an endemic locality led to their infection? But while opinions must necessarily differ on such intricate questions as the mode of propagation of a disease so little understood as leprosy, there can be no two opinions as to the high value of this last work of Zambaco Pacha on the subject which he made so completely his own, and to which he devoted his life.

S. L. Cummins.

Rho (Filippo). **Die tropischen Intoxikationskrankheiten. 1. Vergiftungen durch pflanzliche Giften.** [Tropical Toxic Diseases. 1. Vegetable Poisons.]—Mense-*Handbuch der Tropenkrankheiten.* 2nd Edit. Vol. 2. pp 517–616. 1914. Leipzig: Verlag von J. A. Barth.

This monograph forms part of an extensive *Handbuch der Tropenkrankheiten* edited by Dr. Carl Mense, who has translated Dr. Rho's work into German. As the sub-title tells us, Dr. Rho deals only with vegetables poisons, but the term is somewhat elastic since the book contains sections describing Pellagra, Kava, Tea and Cassava. The general introduction begins with a definition of a poison and draws attention to the great number of such substances to be found in the vegetable kingdom. Follow certain historical references, such as include Socrates and his compulsory draught of hemlock; and the toxicological experiments of Mithridates. Dr. Rho suggests, as is indeed most likely, that the early knowledge of poisonous plants was acquired through fatal accidents. Dr. Rho briefly reviews the various uses to which mankind has put this knowledge, mentions symptoms and states produced by their action and refers to habit, toleration and idiosyncrasy. Idiosyncrasy may be racial, or individual. Animals differ from one another and from man in their reaction to poisons and even colour makes a difference, as in the well-known case, quoted by Darwin, of the resistance offered by black pigs to the effects of "paint-root" (*Lachnanthes*).

The rest of the work is divided into sections classifying plant poisons according to their use and employment by man :—

i. Arrow poisons. Seventeen families and thirty-seven species of plants from which such poison may be obtained are given. The most powerful and best known of these are derived from various species of *Strychnos*, *Aconitum ferox*, *Strophanthus hispidus* and *Antiaris toxicaria* (Upas tree). The well-known Curare is made from *S. toxifera* and other species of *Strychnos*. The Aconite root is said to be used by the hill tribes of the Himalayas. This may be so occasionally when setting bow-traps for wild animals, but not otherwise. The Akas of Assam, who are not mentioned, use aconite poisoned arrows for the chase and when head hunting. Only the most important of these poisons are fully described, with illustrations of the plants from which they are derived. Dr. Rho points out that snake poison is often mixed with the vegetable matter. Of the illustrations, which are reproduced drawings, all are clear and satisfactory. Fig. 4, *Strophanthus, hispidus*, is very good.

ii. Poisons used in ceremonial or judicial ordeal (*Gottesurteil*). A well-known custom all over Europe during the middle ages, trial by ordeal, is now only practised among certain tribes in Africa and in Madagascar. The best known of these poisons, used to prove guilt or innocence in cases of crime or witchcraft, is the Calabar bean (*Physostigma venenosum*). An emulsion is made and swallowed. The innocent vomit and are safe, the guilty retain the poison and die!

iii. The third section treats of poisons used for catching fish. A very long list of these is given. The active principle in many of these plants is Saponin or a similar glucoside.

iv. Plant poisons used for homicide or suicide. Of these there is nothing new to be noted. Considerable space is devoted to Dhatura and Dr. Rho states that an attempt was made to poison the French garrison of Hanoi with this drug on June 28th, 1908. Severe symptoms of poisoning occurred but no death. Dhatura was a favourite poison with the Thugs of India and is much used in the East, as one or other of the several species grows wild, and the poison is easily obtained.

Sections v, vi and vii deal with plant poisons used for killing animals, large and small; with poisonous plants dangerous to domestic animals; and with plants which occasionally, generally by accident, poison mankind. *Abrus precatorius* is described in Section vii but not in Section v, so it is evident that Professor Rho is not aware of the use of Abrin, either alone or with Arsenic, by the 'Chamars' of India as a 'sui' for poisoning cattle.

Section viii includes plants which have an irritating action on the skin or mucous membranes. Of these no less than seven belong to the family *Anacardiaceae*. *Rhus vernicifera* produces the lacquer workers' disease in China and Japan, and its representative in temperate climates, *Rh. toxicodendron*, "American poison ivy," causes, in many persons, great irritation of the skin with lachrymation and slight rise of temperature. This plant is frequently sold, it is said, as *Ampelopsis Hoggi*! *Primula obconica*, which only affects certain persons, is not included in Dr. Rho's list.

ix. This is a very comprehensive section treating of poisonous plants employed for domestic purposes, for curative purposes, and as popular abortifacients. It includes, also, a short list of plants used to expel intestinal worms.

Passing over plants that have little interest for medical men, we come to Section xv, which deals with Pellagra, Ergotism etc. The essay on Pellagra is very long and exhaustive, but it contains nothing new and leaves us still ignorant of the cause. The bibliography which follows it is, to quote Dominie Sampson, "prodi-gious"—If Dr. Rho has read all it contains he has the reviewer's deepest sympathy.

Sections xvi and xvii include, among others, essays on Alcohol, Opium, Indian hemp and Cocaine. Cocaine, Indian hemp and Alcohol are potent for evil in the order as arranged. Dr. Rho deals fairly with them and his article on Alcohol is logical and tolerant, his statements being backed up by convincing facts all pointing to one conclusion. If the evil effects of abuse of alcohol, and the same is true of cocaine and ganja, were confined to the body and mind of the individual they would be bad enough. These poisons lead, however, to much crime and insanity and their victims are a danger to society. It would be well if all forms of distilled spirit were strictly confined to the arts and to medicine. We should still have wine and beer to make the "glad heart" when necessary! With Opium it is quite otherwise. The opium eater's troubles, if any, are his own. He does not become vicious or insane. The reviewer was a witness before the Indian Opium Commission and knows that many thousands in India and in the East generally use opium freely. If the Chinese had smoked ganja we should never have heard a word against opium; but they are a wise people. Of Tea, Coffee, Maté, Kola and Kava nothing need be said.

Such is a brief review of the contents of this work. It is interesting, carefully compiled and full of valuable information. Of the very few misprints one should be noticed: The name of the author of "Rambles and Recollections of an Indian Official" is SLEEMAN, not SHUMAN. The bibliographies which follow the sections are reasonably complete and works on Indian medical jurisprudence are included, but the reviewer is surprised not to find any reference to that mine of information—The Pharmacographia Indica.

J. H. Tull Walsh.

By Royal Warrant to H.M. the King.

IZAL

A TRIUMPH OF CONCENTRATION.

The pioneer modern high-power germicide. Officially adopted throughout the British Empire. Uniform germicidal power guaranteed. Mixes equally well with soft, hard and brackish, or salt water.

MEDICAL IZAL

Specially prepared for Medical and Surgical work. Used with marked success as an intestinal antiseptic in the treatment of Dysentery, Enteric Fever, Cholera, etc.

IZO-IZAL

A combined germicide and pesticide. Unrivalled for the destruction of insects and larvae, and microbes, at one operation. 1 part in 30,000 destroys mosquito larvae.

AGENCIES THROUGHOUT THE EMPIRE.

Samples and Scientific Reports sent free on application to the Manufacturers:

Newton, Chambers & Co., LTD.,

THORNCLIFFE, near SHEFFIELD.

BUREAU NOTICES.

Works in the Bureau Library may be consulted between 10 and 5 30.

The Director can be seen between 10 and 1; for a later hour an appointment should be made.

The Director will be glad to receive early copies of works or reprints on Tropical Diseases for notice in the *Bulletin* and for the Library. To be addressed—Tropical Diseases Bureau, Imperial Institute, London, S.W.

(Telephone:—Kensington, 5188.)

BOOKS RECEIVED.

BAERMANN (Gustav) [Dr.] & ECKERSDORFF (Otto) [Dr.] Atlas Tropischer Darmkrankheiten.—viii + 56 pp. Royal 4to. With 57 plates. 1913. Leipzig: Johann Ambrosius Barth. [Price Mks. 80.]

TURNER (J. A.) [M.D., D.P.H., Executive Health Officer Bombay Municipality.] Sanitation in India (With Contributions by B. K. Goldsmith, S. C. Hormusji, K. B. Shroff, and L. Godinho).—viii + 1014 pp. 8vo. 1914. Bombay: The Times of India. [Price 15*s.* net.]

NEUMANN (R. O.) [Dr. med. et phil.] & MAYER (Martin) [Dr. med.] Atlas und Lehrbuch wichtiger tierischer Parasiten und ihrer Ueberträger mit besonderer Berücksichtigung der Tropenpathologie. [Lehmann's Medizinische Atlanten Band XI.]—vi + 580 pp. With 237 text figs. and 45 plates containing 1300 coloured illustrations. 4to. 1914. München: J. F. Lehmann's Verlag. [Price Mks. 40.]

GAIT (E. A.) [C.S.I., C.I.E., I.C.S.] Census of India 1911, Vol. I. Part 1. (Report.)—xi + 450 + xviii pp.; Part 2. (Tables.)—439 pp. F'cap. 1913. Calcutta: Supt. Govt. Printing, India. [Price, Pt. 1, Rs.5 or 7*s.* 6*d.*; Pt. 2, Rs.4 or 6*s.*]

CRAWFURD (Raymond) [M.A., M.D., Oxon., F.R.C.P.] Plague and Pestilence in Literature and Art.—viii + 222 pp. 8vo. With 31 plates and frontispiece. 1914. Oxford: Clarendon Press. [Price 12*s.* 6*d.* net.]

FRY (A. B.) [Major, I.M.S., M.D.,Lond., D.T.M. & HY. (Camb.) &c.] Second Report on Malaria in Bengal.—37 pp. F'cap. 1914. Calcutta: The Bengal Secretariat Book Depôt. [Price, Indian Rs. 2-4; English 3*s.* 6*d.*]

STANLEY (Arthur) [M.D., B.S., Lond., D.P.H.] Shanghai Municipal Council Health Department. Annual Report 1913.—42 pp. F'cap. 1914. Shanghai: Kelly & Walsh Ltd., Canton Road. [Price not stated.]

REPORT TO THE MANAGING COMMITTEE

ON THE

LIBRARY

OF THE

TROPICAL DISEASES BUREAU.*

On the establishment of the Sleeping Sickness Bureau in June, 1908, the formation of a collection of the published papers dealing with trypanosomes and the diseases caused by them was at once begun as an aid to the Bureau's main work of collating and publishing information regarding sleeping sickness. The efforts put forward during the four years of the Bureau's existence resulted in the getting together of the nucleus of a general library on tropical diseases, besides a collection of papers relating to the trypanosomiases which, for its completeness, is perhaps unique.

At 1st July, 1912, on the expansion of the Sleeping Sickness Bureau into the Tropical Diseases Bureau, the Library contained about 350 bound volumes, mainly serial publications received in exchange for the *Sleeping Sickness Bulletin*, and some 1,500 reprints of papers. From that date the scope of the Library widened and the number of volumes has been more than trebled. The present position of the Library as regards the numbers of publications is shown below :—

Number of bound volumes	1,100
Number of reprints	2,100
Number of reports, Departmental Bulletins, unbound pamphlets, &c.	600

---

* Presented at a Meeting of the Managing Committee of the Tropical Diseases Bureau on April 22nd, 1914.

Serial publications.—The Library's main source of accession is the exchange of the Bureau's publications with other suitable publications. Some 50 periodicals were on the exchange list of the *Sleeping Sickness Bulletin*. With the commencement of the *Tropical Diseases Bulletin* and the *Tropical Veterinary Bulletin* this list was revised in November, 1912, a few exchanges being discontinued and many additional ones being obtained. At 31st December, 1913, 122 periodicals were in exchange with the *Tropical Diseases Bulletin* and 39 were in exchange with the *Tropical Veterinary Bulletin*.*

The Director will be glad to consider proposals for the exchange of the Bureau publications with other medical and scientific journals in which original papers on tropical diseases or parasitology are published.

The Bureau **subscribes** for the following periodicals :—

Archiv für Protistenkunde.
Beihefte z. Archiv für Schiffs- und Tropen-Hygiene.
Bulletins et Mémoires de la Société Médicale des Hôpitaux de Paris.
Centralblatt für Bakteriologie, 1. Abt. Originale.
Deutsche medizinische Wochenschrift.
Index Medicus.
Journal of Cutaneous Diseases, including Syphilis.
Journal of Hygiene.
Journal of Infectious Diseases.
Medicina Contemporanea (Lisbon).
Münchener medizinische Wochenschrift.
Parasitology.
Wiener klinische Wochenschrift.
Zeitschrift für Chemotherapie und verwandte Gebiete, Originale.
Zeitschrift für Hygiene und Infektionskrankheiten.
Zeitschrift für Immunitätsforschung und experimentelle Therapie, Originale.

The **geographical distribution** of the journals received is as follows :—

Europe.			
Great Britain ..	26	Belgium	2
Italy	20	Holland	2
France	17	Russia	1
Germany	16	Switzerland	1
Portugal	4	Spain	1
Austria	2	Greece	1
America.			
United States ..	31	Central America ..	4
South America ..	6	Canada	1
Asia.			
India	6	Indo-China	1
Dutch East Indies	2	Philippine Islands ..	1
China	1		
Africa.			
Union of South Africa,	2	Algiers	1
Egypt	1	Nyasaland Protectorate	1
Tunis	1	Mauritius	1
Australasia.			
Australia	2	New Zealand.. ..	1

The policy of completing the sets of the more important tropical journals in the Library by purchasing the earlier volumes has been adopted. The Bureau has now **complete series** of the following 46 publications. An asterisk marks those journals which are of more especial interest to workers on tropical medicine.

* A complete list of the periodicals received up to December 31, 1913, was printed in the *Tropical Diseases Bulletin*, Vol. 3, No. 1.

British Empire.

*Annals of Tropical Medicine and Parasitology (Liverpool), 1907—
*Bulletin of Entomological Research (London), 1910—
Canadian Medical Association Journal (Toronto), 1912—
*Indian Journal of Medical Research (Calcutta), 1913—
Journal of Hygiene (Cambridge), 1901—
*Journal of the London School of Tropical Medicine (London), 1911—13.
*Journal of the Royal Army Medical Corps (London), 1903—
*Journal of Tropical Medicine and Hygiene (London), 1898—
*Journal of Tropical Veterinary Science (Calcutta), 1906—1912.
Lister Institute, Collected Papers (London), 1904—
Memoirs of the Department of Agriculture in India, Veterinary Series, 1913—
*Nyasaland Sleeping Sickness Diary (Zomba), 1909—
*Paludism (Simla), 1910—12.
Parasitology (Cambridge), 1908—
*Reports of the Sleeping Sickness Commission of the Royal Society (London), 1903—
Review of Applied Entomology (London), 1913—
Series A: Agricultural.
Series B: Medical and Veterinary.
*Scientific Memoirs by Officers of the Medical and Sanitary Departments of the Government of India, new series (Calcutta). 1902—1913.
*Yellow Fever Bureau Bulletin (Liverpool), 1911—

Foreign.

American Journal of Public Health (New York), 1911—
*American Journal of Tropical Diseases and Preventive Medicine (New Orleans), 1913—
*American Society of Tropical Medicine (Yearly volumes), 1904—
*Annales d'Hygiène et de Médecine Coloniales (Paris), 1898—
*Archiv für Schiffs- und Tropen-Hygiene, and Beihefte (Leipzig), 1897—
*Archives de l'Institut Pasteur de Tunis, 1906—
Archives of Internal Medicine (Chicago), 1908—
Archives de Parasitologie (Paris), 1898—
*Archivos de Hygiene e Pathologica Exoticas (Lisbon), 1905—
Archivos do Instituto Bacteriologica Camara Pestana (Lisbon), 1906—
*Boletin da Sociedade Brasileira de Dermatologia (Brazil), 1912—
Bulletin de l'Office Internationale d'Hygiène Publique (Paris), 1909—
*Bulletin de la Société de Pathologie Exotique (Paris), 1908—
Bulletin de la Société Portugaise des Sciences naturelles (Lisbon), 1907—
Folia Microbiologica (Delft), 1912—
Journal of Economic Entomology (Concord), 1908—
Journal of Experimental Medicine (New York), 1895—
*Medeelingen van den Burgerlijken-Geneeskundigen Dienst in Nederlandsch-Indië, 1912—
*Memorias do Instituto Oswaldo Cruz (Brazil). (Rio de Janeiro, Manguinhos), 1909—
Pathologica (Genoa), 1908—
*Philippine Journal of Science. Section B. (Tropical Medicine), 1906—
Proceedings of the Society for Experimental Biology and Medicine, (1904—)
*Revue de Médecine et d'Hygiene Tropicales (Paris). 1904—
Texas State Journal of Medicine (Fort Worth), 1905—
United States War Department Bulletin (Washington), 1913—
Zeitschrift für Chemotherapie und verwandte Gebiete. 1. Teil. Originale (Leipzig), 1912—
Zeitschrift für Immunitätsforschung und experimentelle Therapie, Originale (Jena) 1908—

Lacunæ.—Efforts to complete some sets of the serial publications have been fruitless owing to the earlier numbers being out of print and unprocurable from the publishers. In these cases the Bureau can now only hope to obtain the missing parts through the secondhand booksellers or by presentation. Some of these **lacunæ** are noted below :—

Bulletin de la Société Médico-Chirurgicale de l'Indo-Chine, 1911. Vol. 2, Nos. 3, 6, 7, and 8, and Title-page and Index.

Geneeskundig Tijdschrift voor Nederlandsch-Indië. Volumes 1 to 40: and 1901. Volume 41. Part I.

Indian Medical Gazette, Volumes 1 to 33, and the following numbers, viz.—1899: Vol. 34, Nos. 1 and 7-11. 1900: Vol. 35, Nos. 2-4, 6-7, and 9-12. 1901: Vol. 36, Nos. 1-7, 9, and 12. 1902: Vol. 37, Nos. 4 and 10. 1903: Vol. 38, Nos. 1, 3, 5-12. 1904: Vol. 39, Nos. 1-3, and 9-12. 1905: Vol. 40, Nos. 1-3. 1906: Vol. 41, Nos. 9 and 10. 1907: Vol. 42, Nos. 4 and 9. 1908: Vol. 43, No. 8. 1909: Vol. 44, No. 6. 1910: Vol. 45, Nos. 2 and 3. 1912: Vol. 47, Nos. 5 and 10 and Indices to Vols. 36, 38, 39 and 40.

Malaria e Malattie dei Paesi Caldi. 1911. Vol. 2, Nos. 4 and 6.

Memoirs of the Liverpool School of Tropical Medicine. Nos. 8 and 9.

Records of the Egyptian Government School of Medicine, Cairo. Vol. 1.

Southern Medical Journal. Vols. 1 to 3, and 1911. Vol. 4, Nos. 7 and 12; 1912. Vol. 5, Nos. 9 and 12.

United States Naval Medical Bulletin. 1907. April, Vol. 1, Nos. 1 and 4; 1908. January, Vol. 2, No. 1; 1911. April, Vol. 5, No. 2.

In the case of some other important publications, such as the *Annales de l'Institut Pasteur*, Paris, the *Archiv für Protistenkunde*, and the *Centralblatt für Bakteriologie*, 1. Abt. Originale, which would be of great value to the Library, the cost of obtaining the back volumes has so far proved prohibitive.

Books.—For the acquisition of current books the Library mainly depends on presentation or on the receipt of copies for review in the *Bulletins*. The medical publishers are applied to for copies of suitable books, and these books, after review, are placed in the Library. About 50 of the most recent books on tropical diseases have thus been acquired. As the reviews in the *Bulletins* become more widely known and quoted an increasing number of books will probably be received for review, and for a subsequent place in the Library.

In addition to books purchased on the recommendation of the Sectional Editors, some of the more important reference books and standard works have been bought.

The following are some of the more important **recent books** that have been added to the Library :—

Laveran & Mesnil: Trypanosomes et Trypanosomiases, 2 edit. (Paris.)

Roberts (Stewart R.): Pellagra. History, Distribution, Diagnosis, Prognosis, Treatment, Etiology. (London.)

Wood: A treatise on Pellagra for the General Practitioner. (New York and London.)

Herms: Malaria: Cause and Control. (New York.)

Besson: Practical Bacteriology, Microbiology and Serum Therapy. (London.)

Hoare: A System of Veterinary Medicine. By various writers. (Vol. I.) (London.)

Gesammelte Werke von Robert Koch (3 vols.). (Leipzig.)

v. PROWAZEK: Handbuch der Pathogenen Protozoen. Lief 1-5. (Leipzig.)
CRALL & CLARAC: Traité Pratique de Pathologie Exotique (5 vols.). (Paris.)
In Onore del Prof. Angelo CELLI nel 25° Anno Insegnamento. (Turin.)
HAFFKINE (W. M.): Protective Inoculation against Cholera. (London.)
MENSE: Handbuch der Tropenkrankheiten. 2 edit. (2 vols.). (Leipzig.)
Medizinal-Berichte über die Deutschen Schutzgebiete für das Jahr, 1910-11. (Berlin.)
GRAHAM-SMITH: Flies in Relation to Disease. Non-Bloodsucking Flies. (Cambridge.)
RODHAIN, PONS, VAN DEN BRANDEN, & BEQUAERT: Rapport sur les Travaux de la Mission Scientifique du Katanga (Octobre, 1910, à Septembre, 1912). (Brussels.)
HENSON: Malaria: Etiology, Pathology, Diagnosis, Prophylaxis and Treatment. (London.)
ROGERS: Dysenteries: Their Differentiation and Treatment. (London.)
WALL: The Poisonous Terrestrial Snakes of our British Indian Dominions (including Ceylon) and how to recognize them, with Symptoms of Snake Poisoning and Treatment. (Bombay.)
VEDDER: Beriberi. (London.)
PATTON & CRAGG: A Text Book of Medical Entomology. (London, Madras and Calcutta.)
ZAMBACO PACHA: La Lèpre à travers les Siècles et les Contrées (Anthologie). (Paris.)
BAERMANN (G.) & ECKERSDORFF (O.): Atlas tropische Darmkrankheiten. (Leipzig.)
TURNER (J. A.): Sanitation in India. (Bombay.)
NEUMANN (R. O.) & MAYER (Martin): Atlas und Lehrbuch wichtiger tierischer Parasiten und ihrer Ueberträger mit besonderer Berücksichtigung der Tropenpathologie. (Munich.)
GAIT (E. A.) Census of India, 1911, Vol. I, Parts 1 & 2. (Calcutta.)

Reprints.—With the growth in the number of serials received in the Library, the Bureau has become independent of other medical libraries, so far as the journals on tropical medicine are concerned, but as other medical journals occasionally publish papers on exotic diseases, the Libraries of the Royal College of Surgeons and Royal Society of Medicine are visited fortnightly so that a systematic watch may be kept on the contents of journals which are not received at the Bureau. The titles of papers thus found are noted and the authors are written to for reprints. In this way the reprints in the Library are steadily being added to, and since July, 1912, over 500 have been collected and filed.

Reports.—Steps have also been taken by means of letters addressed to the various Medical and Sanitary Departments to make the Library's collection of official Annual Medical and Sanitary Reports from the tropical colonies and from India more complete.

Medical Officers of Health will be rendering a valuable service to the Bureau if they will forward copies of their Reports to the Library.

Donations.—The Bureau is indebted to Lieutenant-Colonel J. H. Tull Walsh, Mrs. Frederic Bagshawe, the late Surgeon-General Sir A. M. Branfoot, Lieutenant-Colonel W. J. Buchanan, I.M.S., Dr. A. G. Bagshawe, Dr. G. C. Low, and others, for donations of books and periodicals. By these gifts the Bureau has become

possessed of some rare works on tropical medicine which otherwise might have been unobtainable, and it is greatly to be hoped that the Library may continue to receive such valuable benefactions.

Exchanges of Duplicates.—Exchanges of Duplicates have been arranged with the London School of Tropical Medicine, and some duplicates from the British Medical Association Library have been received *in lieu* of an annual subscription to the *Tropical Diseases Bulletin*.

The Bureau possesses a considerable collection of duplicate publications relating to tropical diseases, and proposals for exchange with other libraries would be willingly entertained.

Catalogues.—The catalogues of the Library are kept on the card system. Besides the general catalogue of periodical publications and books, a subject catalogue, containing the titles of the individual papers on tropical diseases printed in the various journals, is being made. This catalogue is arranged under the names of the diseases, the individual entries within these divisions being filed alphabetically under authors' names.

Accommodation.—The room in which the Library is now housed has shelving space for between 1,200 and 1,300 books. Already the Library has nearly outgrown this space, and want of additional shelving accommodation therefore becomes an urgent necessity.

General.—The Library exists primarily as an aid to the preparation of the Bureau publications, and its chief aim therefore has been to keep abreast of the current literature on tropical diseases. In this the Bureau has been so far successful that over 80 per cent. of the original papers summarized in the *Bulletins* are to be found in the Library. There are unfortunately some countries (*e.g.*, Russia and Japan, from each of which only one exchange has been obtained) of which the published work on tropical diseases is still very inadequately represented. On the other hand, several of the exchanges (more especially from Central and South America) are not accessible, so far as is known, in any other of the medical libraries in London.

The Library is open to all comers. It is at present mainly used by the Sectional Editors, who freely avail themselves of the facilities for borrowing the journals and books in connexion with their work. Of a necessity, many medical men interested in the study of tropical diseases reside abroad, and the number of potential users of the Library in England is limited. As the Library grows, and its convenience becomes better known, an increasing number of medical officers home on leave from the tropics are likely to make use of it.

R. L. SHEPPARD,

6th April, 1914. Librarian.

Tropical Diseases Bureau,

Imperial Institute, S.W.

CONTENTS.

AMOEBIASIS AND DYSENTERY.

PAGE.

UJIHARA : Amoebiasis in Formosa 447
JAMES : Amoebiasis in the Canal Zone 447
MATHIS ; LANDOUZY & DEBRÉ : Carriers of Amoebic Dysentery 448
VEDDER : Origin and Present Status of Emetine Treatment .. 449
INDIAN MEDICAL GAZETTE : Treatment of Amoebiasis by Emetine.. 449-452
VARIOUS AUTHORS (31 papers) : Treatment of Amoebiasis with Emetine 452-454
JAMES : The Effects of Certain Drugs on Pathogenic Entamoebae 454
BROOKE : Quinine in Amoebic Dysentery 455
WINN ; WHEELER : Salvarsan in Amoebic Dysentery.. .. 455-456
DARLING : The Life History and Viability of *E. tetragena* .. 456
KUMAGAWA : Pathogenic Amoebae in Japan 456
FISCHER : Amoebic Cystitis 457
BEHREND : Amoeba from *Macacus rhesus* 457
BOFINGER : Bacillary Dysentery in Württemberg 458
KEUPER : Bacillary Dysentery Affecting Children 458
DESDERI : Bacillary Dysentery in Piedmont 458
GETTINGS : Dysentery in Asylums 459
DRESEL & MARCHAND : Bacteriological Observations 459
BATES : Ants as Possible Transmitting Agents in Bacillary Dysentery 459
MORISON & CHITRE : Cases of Diarrhoea in Poona 460
DUMAS : Emetine in Bacillary Dysentery 460
LUNN : Arthritis following Bacillary Dysentery 460
BAHR : Epidemic Dysentery in Fiji 461
DENIER : Examination of Stools at Saigon 462
CUNNINGHAM & HARVEY : Problems in Dysentery 463
BOURRET : Dysentery in Annam 463
LUTSCH ; EVERS-ANGAUR : Treatment of Dysentery 463
MÜHLMANN : Liver Abscess in South Russia 464
TEISSER : Amoebo-Spirillar Dysentery 464
CASTELLANI : A Protozoal Parasite associated with Dysentery 464
GÄBEL : Dysentery due to Tetramitid Flagellates 465
MAYER : Emetine Treatment in Lamblia Dysentery 466
WALKER : Experimental Balantidiasis 466

CHOLERA.

ROSS : Epidemiology of Cholera in India 469
LOW : Cholera throughout the World in 1911 and 1912 .. 469
GASIOROWSKI : Cholera in Galicia 470
CRASTER : Ship-Borne Cholera 470
TURNER : Bacteriology of Cholera 471
SABELLA : The Skin in Cholera 471
ROSENTHAL ; AUMANN ; STRISOWER ; MOUSTOUSES ; ARNAUD ; Cholera in the Balkan War 472-475
LOEWY ; LUNN ; STUMPF ; CANDIOTTI : Treatment of Cholera 475-476
GREIG : The Vitality of the Cholera Vibrio outside the Body .. 477

STAMM : Changes in Cholera Vibrios in Water 477
DEFRESSINE & CAZENEUVE : The Persistence of V. cholerae in and outside the Body 478
FLU : The Agglutinability of V. cholerae from the Gall Bladders of the Dead 478
KABESHIMA : Spontaneous Agglutination of Cholera Vibrios .. 479
GREIG : Cultivation of Cholera Bacillus from the Lung .. 479
——. Precipitation of Bacterial Protein by Concentrated Salt Solution 479
PENFOLD & VIOLLE : A Method of producing Fatal Intoxication with Bacteria 480
Van LOGHEM : V. cholerae and V. El Tor 480
ROTKY : Immunization Experiments against V. El Tor .. 481
DRENNAN ; DEFRESSINE & CAZENEUVE ; KLIMENKO ; FLU ; LAMAS ; GLOSTER ; IONESCO-MIHAESTI & CIUCA : Cholera Vibrios and Non-Cholera Vibrios 481-484
CANTACUZENE & MARIE : Cholera in Guinea-Pigs 485
HARRISS : Pipe Water Supplies and Reduction of Cholera in India 486
GREIG : Disinfection in Cholera 486
KNAPTON ; DUNN : Practical Points in dealing with Epidemics 487
BISHOP : Cholera Prevention on the Lower Ganges 488
CIACCIA ; MICHAILOW : Pathological Anatomy in Cholera .. 488-489
MILLOUS : Pseudo-cholera and Protozoa 489
MENDOZA : Experimental Cholera in the Monkey 490
CANSTATT : Biographical 490

LEPROSY.

NETTER : The Prophylaxis of Leprosy in France 491
SCHMITTER : Leprosy in Relation to Treponematous Disease .. 493
LEBOEUF & SALOMON : Leprosy in New Caledonia 493-494
MATHIS : Leprosy in Tonkin 495
MOREAU : Leprosy in the Comoro Islands 495
PEIPER : Anti-Leprosy Measures in German East Africa .. 496
WILLIAMS : Case of Nodular Leprosy 497
PAUTRIER : Diagnosis of Leprosy by Laboratory Methods .. 497
DAVIES : Specific Treatment of Leprosy 498
HONEIJ : Symptoms of Leprosy 498
TERRA : A Case of Achromic Leprosy 498
COLOMBIER ; Bony Lesions in Leprosy 499
THOMSON ; Transmission 499
ROST : DUVAL : The Leprosy Bacillus and its Cultivation .. 499-500
WOLBACH & HONEIJ : The Diphtheroid Bacillus from Leprosy Lesions 501
WOOLLEY ; FEDERATED MALAY STATES ; BAYON : Cultivation of the Leprosy Bacillus 502-504
FRASER & FLETCHER : Leprosy and Fish Eating 505
MARCHOUX : Rat Leprosy 505

BOOK REVIEWS.

ROGERS : Dysenteries. Their Differentiation and Treatment .. 507
ZAMBACO PACHA : La Lèpre à travers les Siècles et les Contrées 508
RHO : Die tropischen Intoxikationskrankheiten 1. Vergiftungen durch pflanzliche Giften [MENSE's Handbuch.] 509